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ORIGINAL ARTICLES.

ARE LOW DEGREE LENSES "MERELY OF MYTHICAL VALUE?"

Read in the Section on Ophthalmology, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

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The leading editorial of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, of Feb. 3, 1894, entitled, "Superfluous Spectacles" has attracted much attention and elicited considerable discussion and criticism. Most critics have, so far as observed by the writer, agreed that the editorial is, in the main, timely and excellent. The object of the editor was to enter a protest against what seems to him to be a growing tendency on the part of many ophthalmologists to find in the eyes a cause for all the ills to which flesh is heir, and also to fear that ills will come to the most vigorous if any error of refraction is allowed to go uncorrected. As a protest against the prescribing of spectacles without a clear indication for their use, and against considering the eye apart from the organism as a whole, we believe it is strong and timely.

The editor, however, not only protested against the prescription of lenses without clear indications for their use, but he also stated that certain lenses, namely spheres of less than 0.75 D. and cylinders of less than 0.50 D. were never indicated because they are valueless and so should never be prescribed. All of these low degree spheres and cylinders are to him "superfluous spectacles." In this your essayist believes he is mistaken, and to bring out the reasons for this belief as clearly and forcibly as possible is the object of this paper. As the editorial in question may not be familiar to all present, some quotations will be made from it, followed by extracts from a letter by the writer, commenting on this editorial, published in the same JOURNAL two weeks later:

QUOTATION FROM EDITORIAL.

"Of all facts in medicine, none are the better founded than the knowledge that even moderate degrees of far-sightedness or astigmatism lead in many persons to discomfort in the use of the eyes and often to headaches and other nervous disturbances. The basis for the rational prescription of convex glasses and cylinders is hence as positive as the results are gratifying.

"But does every optic defect need correction and is every case of painful vision curable by glasses?

"No ophthalmologist can overlook the fact that many persons can tolerate moderate optic defects and some even high degrees of ametropia without ever suffering therefrom. . . .

"On inquiring into the general health of patients complaining of eye-strain and its consequences, it becomes apparent that the amount of optic imperfection which can be tolerated without distressing sensations depends on the vigor of the system at large, and especially the condition of the nervous system. It is not rare that patients call for correction of moderate far-sightedness or astigmatism, accept the glasses with satisfaction for the time, but lay them aside as unnecessary after some improvement of their general condition.

"Since errors of refraction are stationary conditions, (except progressive myopia which is foreign to this topic) there is hence no object in correcting them, unless they cause some annoyance, be it by poor sight or in the form of discomfort or headache or distress of any kind. If, however, any discomfort referable to the eyes is present, what is the lowest amount of ametropia which can be considered as the cause of the eye-strain?

"It is the general experience that a hypermetropia of 0.75 D., or any degree of hypermetropia uncorrected to the extent of 0.75 D. can cause distress in many persons. But that a hypermetropic eye can appreciate a correction of half a dioptry or less will not be admitted by most observers. There is more diversity of opinion as to the amount of astigmatism which may require correction. While again 0.75 D. represents the lowest cylindrical lens which is ordinarily of benefit, cases do occur beyond doubt in which half a dioptry of astigmatism leads to discomfort or headaches.

"Such cases, however, are exceptional and occur as a rule only when the general health is below par. It is true that a cylinder of 0.25 D. is not only employed but even highly recommended by a few prominent oculists, but they have as yet furnished no proof that such lenses benefit their patients. The majority of oculists have learned from their own experience, as well as from the failures of the champions of the 0.25 D. cylinder, that such weak glasses are merely of mythical value."

QUOTATION FROM LETTER.

"The editorial in the JOURNAL of February 3, under the above title, 'Superfluous Spectacles' is on the whole excellent. There are some points, however, which, it seems to me are open to criticism. You seem to argue, though that is not very clear, that if a patient when out of health has glasses prescribed which he wears with relief and comfort until the general health improves and then voluntarily relinquishes them, that the glasses were of no service. As well might you argue that the tonic of restorative medicine taken when out of health was of no benefit because not needed when the health is restored. I believe it is a very common practice with oculists (it certainly is with me) to prescribe lenses with the distinct expectation that they can be taken off when the general health and the eye health improves. The

rest given to the eyes by the glasses assists the eyes to so recuperate that they may be used comfortably without glasses; and the relief given thereby to the nervous and muscular systems, is, I am sure, a potent factor in the general restoration of health. It is not at all uncommon to find young persons suffering from almost constant headache from eye-strain, and in whom the headache is relieved at once and entirely by proper lenses, after a time gradually leaving off those lenses without a return of the headache. Does that prove that the glasses were of no use? Does it not rather prove that the eyes have been so strengthened and improved by the glasses that they are now able to do their proper work without the fatigue and pain formerly experienced? In such cases, where there is a moderate degree of ametropia only, I invariably instruct my patients that the glasses are a means, not an end, and that it is to be hoped that they may later be able to discard them wholly or in part.

You ask: "Does every optic defect need correction?" Certainly not, nor do I think that any prominent ophthalmologist so teaches. It seems to me that the indications for lenses are and should be very distinctly kept in view. They are but two; the relief of discomfort in the use of the eyes and the improvement of vision. If there is no discomfort from the use of the eyes but vision is improved by lenses the patient may, I think, elect whether he will wear glasses or not. If the bother of wearing glasses is greater than the pleasure of improved sight he may with propriety refuse them. (Except in progressive myopia which is foreign to this topic.) If, on the other hand, there is discomfort from the use of the eyes which can be relieved more easily by the use of the lenses than by any other means, whether the required lens be of high or low power, such lenses should be prescribed and worn so long as, and no longer than they are beneficial. And this leads to the consideration of what it seems to me is a most important misconception in your editorial, when you comment on the use of low degree spherical and cylindrical lenses. You argue that the eye can not appreciate a less degree than 0.75 D. sphere and a less degree than an 0.50 D. cylinder. If this were so it would very much simplify our trial cases of test lenses. It is illogical to say that the eye can not appreciate less than 0.75 D. S. below 0.75 D., and yet can appreciate a shorter interval above that; or that the eye can not appreciate less than 0.50 D. C. below 0.50 D., and can appreciate less than that above. So that if your statement is correct our trial cases instead of having, as usually now, twelve pairs each of spherical and cylindrical lenses up to 3.00 D. need have but four pairs of spheres, viz: 0.75 D., 1.50 D., 2.25 D., and 3.00 D., and six pairs of cylinders, viz: 0.50 D., 1.00 D., 1.50 D., 2.00 D., 2.50 D., and 3.00 D. The fact is, however, that many eyes can appreciate a difference of one-fourth of a dioptre and even one-eighth of a dioptre in weak spheres or cylinders. But the ability of the eye to appreciate such small differences is not proof that such differences are of practical importance; that must be determined by clinical experience. In regard to that you say: "The majority of oculists have learned from their own experience, as well as from the failures of the champions of the 0.50 D. cylinder, that such weak glasses are merely of mythical value." I think you are mistaken in that statement. So far as I have been able to learn and observe, the oculists who believe that such weak glasses are of merely mythical value have not used them. They do not believe that such lenses can have any value, and so have never tried them.

Again you say: "It is true that a cylinder of 0.25 D. is not only employed but even highly recommended by a few prominent oculists, but they have as yet furnished no proof that such lenses benefit their patients." Now that statement surprises me very much, for I thought a great deal of proof of such benefit had been furnished. If it has not been presented it should, if available, be before the profession, and I will endeavor to furnish the proof to establish the fact, if it is a fact, that the 0.25 D. cylinder is a most valuable therapeutic agent."

"The majority of oculists have learned from their own experience, as well as from the failures of the champions of the 0.25 D. cylinders that such weak glasses are merely of mythical value."

In this one sentence of the editorial are three disputed points which we will now consider: 1, is the 0.25 D. cylinder of merely mythical value? 2, do the majority of oculists so regard it? 3, have a majority of oculists learned this from their own experience? In all of these points the writer believes the editor mistaken, but desires to view the subject from a calm scientific standpoint and if he himself is the one in error will still welcome the truth. The last two of these questions are comparatively easily determinable by simple inquiry; while the first may be investigated from three standpoints: 1, that of personal experience and observation; 2, the teachings of the text-books; and 3, the personal experience and observation of other workers in this special field.

To assist in answering these questions the writer sent the following letter to one hundred ophthalmologists scattered throughout the land:

"*Dear Doctor:*—There appears to be much difference of opinion among ophthalmologists as to the value of low degree lenses. To assist in solving the problem will you kindly answer the following questions:

"1. Do you ever prescribe cylinders of less than 0.50 D.? or spheres of less than 0.75 D.?

"2. If no. Have you ever prescribed such lenses and if so what are the reasons for discontinuing them?

"3. If yes. In what cases do you prescribe them and what evidence have you of their value?"

Of the 100 so addressed, 75, located in 26 States replied. It would seem as if these replies must give some indication of the practice of ophthalmologists in general in this country. Most of those addressed were unknown to the writer except by reputation, and of very few of them was the practice in regard to low degree lenses known. Under these circumstances it is hardly to be supposed that a great majority of them should have been taken from a minority of oculists. The replies received are surprising, in that they indicate that a very large proportion of oculists employ both weak cylinders and weak sphericals; a few only, prescribe one but not both, and yet fewer prescribe neither. Thus we find that of the seventy-five, sixty-six replied, Yes; they do use the 0.25 D. C. and the 0.50 D. S.; four reply, Yes, but seldom; three use the spheres but not the cylinders, and but two answer no, and one of those the writer of the editorial in question. Seventy do prescribe the 0.25 D. cylinders and five do not, and of the five, three prescribe the 0.50 D. sphericals.

In answer to the second question there are replies from four; two who say that they do not now use

these weak cylinders because they have no evidence of their value, but do not state if they have ever used them; one who says he has quit because he is convinced that they are useless; and one who says he rarely uses them now, because he finds that atropia either shows at least 0.50 D. of astigmatism present or none at all.

The answers to the third question are fairly uniform, most of the answers being, in general terms, That the low degree lenses are prescribed in cases where persistent asthenopic or reflex symptoms are associated with slight errors of refraction, and the evidence of their value is the disappearance of these symptoms when the proper lenses are adjusted. A number of replies state that in many cases the symptoms remain absent so long as the lenses are worn and return at once when the lenses are omitted. I have tabulated these seventy-five replies, all that were received.

Oculist.	Replies to Question 1.	Replies to Questions 2 and 3.
Allen, H.P.	Yes; 0.25 D. C. constantly; 0.50 D. S. also.	Relief of asthenopia and headaches.
Allport, Frank.	Yes; skeptical as to S. Positive of value of 0.25 D. C.	Relief of headeches, asthenopia,etc., in H. as obtain results difficult or impossible without their use.
Ayers, S.C.	Yes; 0.25 D. C. frequently; 0.25 or 0.50 D. S. often, especially in school children, frequently combined.	Improvement of vision and addition to comfort of patient.
Aschman, G. A.	Yes; but not till other means of relief have failed.	In cases of asthenopia after other means as rest, tonics, etc., have failed. Usually young teachers, students, etc., using eyes much.
Baker, A.R.	Yes; very many such cases.	Evidence of value relief from asthenopia. In all cases where there is headache or other evidence of asthenopia, particularly cylinders where axes are irregular. Most happy results in relief of symptoms. Low degree of ametropia cause more severe symptoms than high degree.
Blitz, Adolph	Yes; cylinders 0.25 D. and 0.37 D., sometimes 0.25 D. S.	Eye-strain with headaches,irritation of eyes, etc. Relief of these symptoms.
Bryant, D. C.	Yes.	Where there are symptoms of asthenopia, I correct errors of high or low degree. Complete relief of such symptoms.
Buckner, Jas. H.	Yes; rarely. 0.25 C. alone, frequently combined with 0.25 0.50 S.	Asthenopia. Relief of symptoms.
Carrow, F.	Yes: 0.25 C. and 0.50 S. and compounds of these.	Cases of asthenopia among the 4,000 students under my observation. Relief of asthenopia. Have exceptional opportunity to observe cases for long periods in Michigan University, State Normal School, etc.
Carvelle, H. D. W.	Yes; very often.	Cases of headache and inability to use eyes without discomfort or where sight is materially improved. Relief of asthenopia and improvement of vision.
Cheatham, Wm.	Frequently, especially the cylinders.	To improve vision and relieve pain, blurring, headache, etc. Relief of these symptoms.
Chisolm, J. J.	Very decidedly, yes.	0.25 D. C. — best useful in list especially when astigmatism is oblique asthenopia. Change from inability to use eyes without headache to use all day without trouble and return of headache, etc., when lenses are left off.
Colburn, J. E.	Yes.	Asthenopia not otherwise relieved and reflex irritation not otherwise explained, in which low degrees of error exist. Cessation of symptoms so promptly follows that no other cause of relief can be assigned, other means having failed.
Cotter, Robt. O.	Yes: certainly and frequently.	Almost altogether in cases of H. and H a. Comfort to patient arising from their use best evidence of value.
Coleman, W. F.	Cys. very constantly, 0.50 S. occasionally.	When they improve vision or relieve asthenopia. Simple 0.25 D. C.'s give remarkable relief in a few cases.
Connor, Leartus.	Yes; for more than twenty years.	Same class cases as require stronger lenses and relief of the same. Same relief from eyeache, headache, weariness, photophobia and other evidences of exhaustion as with stronger lenses when they are needed. Relief constant and permanent.
Chase, John.	Yes; cys. frequently for ten years with satisfactory results. S. less often.	In cases of eye-strain where ametropia shows no higher degree of error. Relief of unpleasant symptoms.
Dickinson, Frances.	Yes; particularly cys. in oblique astigmatism.	In cases of asthenopia the weak lenses when they correct the error give the same relief that stronger lenses give in cases for which they are suitable.
Dunlavy, J. C.	Yes; often, because eyes demand them.	A large number of cases of asthenopia fully relieved by their use.
Fox, L. Webster.	Yes; both S. and C. daily.	Asthenopia and headaches. I consider these glasses most valuable.
Frothingham, G. E.	Yes.	In cases of asthenopia showing this amount of error under a mydriatic and am satisfied with the relief in a majority of cases. Formerly ignored these low degrees but soon became convinced this was an error.
Gardiner, E. J.	Yes; C. frequently; S. seldom.	It has been my experience that quite a number of asthenopic symptoms are caused by astigmatism of less than 0.50 D. and proper correction has relieved the difficulty, hence I prescribe them.
Gould, Geo. M.	Most certainly, yes.	Would not cure or keep my patients if I did not do so. Anisometropia, unsymmetric astigmatism and even in isometropia and symmetric astigmatism where relief of symptoms or occupation demands.
Hawley, Clark W.	Yes; more than of higher degrees.	Asthenopia and some reflex troubles that can not otherwise be explained. Relief of symptoms.
Hobby, C. M.	Yes.	Where vision is improved or asthenopia relieved. Asthenopia from ametropia is caused by the effort put forth to secure a sharp image, not upon amount of ametropia. I correct any amount of ametropia which diminishes visual acuteness or leads to fatigue.
Holmes, E. L.	Yes.	I prescribe them whenver on trial they render use of eyes at close work more comfortable.
Hotz, F. C.	Yes.	In the same cases and on the same principles where with higher degrees of error stronger lenses would be given and with the same results.
Jackson, Edward.	Yes; but not often except in combination.	Persistent asthenopia, aggravated by eye-work without other discoverable cause. Freedom from the previous pain, discomfort, congestion, irritation, etc., increased ability for eye-work and recurrence of symptoms on leaving off glasses.
Keyser, Peter D.	Yes; frequently.	In all cases where necessary to relieve strain, I have for twenty-five years found them very serviceable and satisfactory.
Knapp, Herman S.	Cys. exceptionally, Sph. frequently.	Cylinders in one eye, if either has marked ametropia. Spheres not infrequently in young people of nervous temperament.
Kollock, Chas. W.	Yes.	Not very frequently and only in cases where on trial decided relief to asthenopia or decided improvement in vision is obtained.
Maire, L.E.	Yes.	Asthenopia due to slight errors. In a comparatively large proportion of cases, relief is obtained by their use.
Mann, Wm. A.	Yes.	Cases (mainly stenographers, bookkeepers, teachers, sewing girls, etc.) with slight refraction errors with symptoms of eye-strain which are relieved by careful adjustment of lenses tried for several days. Relief of symptoms of eye strain.
Miller, R. W.	Yes; cylinders often, S. occasionally.	In cases of accommodative asthenopia, mostly in young people, marked relief is obtained by such lenses.
Minney, J. E.	Yes.	Students and sewing girls. They give relief.
Mittendorf, B. L.	Yes; frequently, especially cylinders.	In all forms of asthenopia, especially ocular headaches which are, as a rule, relieved by these glasses.
Montgomery, W. T.	Yes; cylinders frequently, S. exceptionally.	Cases with frontal headaches and generally irritable condition of the eyes. Complete relief and ability to use the eyes comfortably.
Moulton, H.	Yes; cylinders frequently, S. occasionally.	The cylinders in cases of oblique astigmatism with asthenopia or headache in most cases give relief to the patient.
Murrell, Thos. E.	Yes; habitually and daily.	Correct all cases of astigmatism to 0.25 D. Give 0.50 D. or less S. as partial correction of higher degree of hyperopia. Relief from symptoms.
Oliver, Chas. A.	Yes, for thirteen years.	Asthenopia and other troublesome eye symptoms not relieved by other means. Relief of these symptoms.
Pinkard, Chas. P.	Yes.	Asthenopia. Relief of symptoms.

OCULIST.	REPLIES TO QUESTION 1.	REPL'ES TO QUESTIONS 2 AND 3.
Price, G. H.	Yes; rather frequently. Nearly 50 per cent. of refraction cases receive one or other alone or in combination.	All cases of low degrees of astigmatism are corrected. Relief of distress in use of eyes.
Prince, A. F.	Yes; in 100 consecutive cases (200 eyes) 36 eyes received C. less than 0.50 D. and 50 received S. less than 0.75 D.	Cases with low refraction error with asthenopia, ocular headache or neurasthenia, not otherwise accounted for. Testimony of patient as to relief by use of glasses and the return of symptoms when glasses are discontinued.
Randolph, R. E.	Yes; 0.25, 0.50 D. cylinders more frequently than any others. S. less frequently.	In all cases where astigmatism of 0.50 or less is present.
Randall, B. A.	Yes; 0.37 or 0.25 cys. not infrequently. Sphericals occasionally.	Patients having low errors with asthenopia not relieved by tonics, hygienic and other means; retinal and choroidal disturbance, etc., call for correction of those errors. Relief of distress, increased capacity for eye work and disappearance of fundus symptoms.
Richey, S. O.	Yes.	Always correct the static refraction fully, but do not often find these low degrees, not due to spasm.
Risley, S. D.	Yes; frequently.	Anisometropic, antimetropia and asthenopia, especially in neurotic individuals. Much clinical evidence.
Ray, J. M.	Yes; where symptoms demand. Never simply because that amount of error exists.	Eye-pain, etc., give proper glasses whether of low or high degree. Relief of the trouble complained of.
Savage, G. C.	Yes.	Correct all astigmatism from highest to lowest degree in all cases.
Schneider, Jos.	Yes; very often.	Cases with small error and large nervous manifestations. Relief of very distressing symptoms.
de Schweinitz, G. E.	Yes.	In all cases in which low degrees of astigmatism are the evident cause of asthenopia in the widest acceptation of the term; because an abundant experience demonstrates that relief follows such practice.
Scott, X. C.	Cys. yes. Sph. except in combination, no.	Cases with asthenopic symptoms and conditions. Cases who could do no work with their eyes without headache which have been entirely relieved.
Smith, F. T.	Yes.	Use them empirically where they seem to relieve asthenopia. In a few cases relief has been complete; in most the glasses were rejected after a few days.
Standish, Myles.	Yes.	In all cases in which the asthenopia or nervous symptoms, headache, etc., are prominent. The evidence of my own eyes, in which 0.25 D. makes the difference between comfort and great discomfort.
Stevens, Geo. T.	Yes; but cys. rarely, now 0.50 D. S. frequently.	Rarely now prescribe 0.25 D. except combination with higher power. Usually 0.25 of astigmatism does not cause annoyance unless associated with muscular trouble and the correction of the latter is usually sufficient relief.
Thompson, J. L.	Yes; most decidedly for past twenty-three years.	Evidence of value accumulates year by year. In hypermetropia, in simple astigmatism, and compound hyperopic astigmatism. The evidence of patients is such in hundreds of cases that I am as fully convinced of the remedial power of these lenses as I am that the earth revolves upon its axis.
Thompson, R. L.	Yes; 0.25 C. frequently. 0.50 S. occasionally.	Never simply to correct an error of refraction but to improve vision, to relieve eye-strain, blepharitis, marginalis, burning and blurring after use of eyes, headaches, pain in eyes, etc. Relief to patients from the symptoms mentioned.
Tiffany, F. H.	Yes; both frequently.	In heterophoria I find them of value; they relieve asthenopia and assist in restoring balance and strength of the extrinsic ocular muscles.
Turnbull, C. S.	Yes; with much pleasure and satisfaction.	Usually in cases of Ha., H., and a H., seldom in Ma and Ma M.
Vermyne, J. J.	Yes; cys. not very frequently.	Cases of constant headache and pain in eyes, etc., that have been treated by other means without relief, and other symptoms of irritation about eyes. As relief of these symptoms through rest of eyes and general treatment is always insisted upon, amount of benefit from lenses is difficult to determine.
Wescott, Cassius.	Yes.	I correct all cases with measurable error if there are symptoms of eye-strain. Disappearance of headaches and other troubles under use of 0.25 to reappear when attempt is made to lay them aside.
Wood, Casey A.	Yes.	Most cases of astigmatism against the rule. Nervous symptoms, as asthenopia and weakness of accommodation, headache, blepharitis, general relief from symptoms.
Würdemann, H. V.	Yes; constantly as to cys.; rarely as to S. except in combination.	Correct low degrees under same circumstances as I would correct higher degrees and with equally good results. Relief of asthenopia and occasionally of reflex disturbances as chorea.
Wilder, Wm. H.	Yes; both.	In persons with low degree of error who use their eyes much at close range presenting symptoms of asthenopia; as smarting pain in head and eye-balls, blepharitis, general debility, etc. Relief from symptoms.
Bettman, B.	Yes; but seldom C. and S. very seldom.	Relief of asthenopia when present. Never given simply because slight error is found. The prescribing of spectacles has been much overdone.
Fiske, Geo. F.	Yes; very seldom.	In rare cases of anisometropia, often where from ill-health use of eyes is difficult except under most favorable conditions. Evidence of value cessation of headaches and ability to use eyes comfortably.
Ware, Lyman.	Yes, but very rarely.	Eye-strain, recovery or restoration of normal condition.
Young, H. B.	Seldom now.	Under atropin I usually find more error or none at all. In anisometropia of low degree I prescribe crossed cylinders. Occasionally in neurasthenics who have much eye-work to do I prescribe 0.50 S. I believe they usually have really no value, the burden of the glasses being greater than the burden of the eye.
Dowling, F.	Cys., no; S. rarely.	I do not think such a low degree of astigmatism needs correcting.
Erwin, A. J.	Cys., no; S. sometimes where accurate vision is required.	I have quit prescribing cylinders of less than 0.50 D., as I am convinced that as a rule a low degree astigmatism is less hurtful than the corresponding cylinders.
Sinclair, J. G.	Cys., no; spheres, yes.	In low degrees of H. and weakness of muscle of accommodation.
Gibson, Robt. D.	No.	With rare exceptions I obtain as good results with plano lenses as with these. (Try it).
Gradle, Henry.	Very rarely, if ever, now.	No evidence that they are of any value.

So far as can be judged by these replies the editor is mistaken in questions two and three. We will now consider the first question. Is the 0.25 D. cylinder of merely mythical value, on the lines suggested? 1, personal experience; 2, the teachings of recent American text-books; and 3, the experience and observation of others.

1. Personal experience and observation. The writer has for many years prescribed the low degree cylinders rather frequently; the low degree spheres rather unfrequently. In the earlier years he believed, as he had been taught, that less than one dioptre of astigmatism was not worth considering. He, however, found cases requiring correction for less degrees, and gradually made more accurate correction until the 0.25 D. cylinder was reached. Then certain cases were found not entirely corrected by 0.25 D. C. and a little over corrected by 0.50 D. C. and so in 1890, 0.37 D. C. was added to the trial lenses and a little later in the same year 0.12 D. C., 0.62 D. C., and 0.88 D. C. An 0.12 D. lens has been prescribed a very few times, in cases requiring a higher correction for the other eye; 0.37 D. is used frequently; 0.62 not so frequently and 0.88 rarely. Cases are constantly seen where a difference of one-eighth dioptre in the strength of the correcting lens causes a decided difference both in the acuteness of vision and in the comfort of the wearer. This has been illustrated several times when a patient for whom 0.37 D. C. lenses has been prescribed returned with the statement that they did not seem right, and upon examination it was found that the optician had substituted

0.25 D. or 0.50 D. When the patient procured the proper glass the trouble disappeared. Those most frequently requiring these weak lenses are schoolboys and girls about the age of puberty, medical and other students, stenographers, bookkeepers and typewriters, sewing girls and finally the neurasthenic and debilitated. Many of these require constitutional and other treatment, and most of them would recover completely with this and prolonged and complete rest for the eyes. But to many of them this rest is simply impossible, and anything which will assist them to bear their necessary load is eagerly accepted.

The lenses are fitted and prescribed with the utmost care. The general condition of the patient is noted, other sources of irritation are sought, and patients are encouraged to take rest, recreation and whatever general remedies may be indicated and to avoid the wearing of glasses unless really necessary. The refraction is carefully worked out and the lens theoretically required noted. But the crucial test is the actual wearing of the lenses. The patient is given lenses such as seem to be required, to wear about his regular work for one, two, three or more days, that he may determine with certainty the effect. This is easily done by having a number of pairs of frames with round cells and a number of cylinders of various numbers cut round so as to fit in these cells. The axis of the cylinder can thus be placed at any desired angle. Where doubt exists as to the value of the lens on trial, window glass so marked that the patient shall not know the difference is substituted and the patient tries that. Rarely one is found who accepts the latter as well as the lens, and he is advised to postpone wearing glasses and try other measures. A number of patients who have been wearing lenses a considerable time have, in the past few months, had their lenses replaced by window glass to see if they liked the one as well as the other. In none of these cases has the window glass given satisfaction.

A few illustrative cases will be given among those furnished by others. Very many equally striking could be added. Nearly all the patients whose cases are given, live in Chicago, have been frequently seen since the glasses were prescribed and have received the advice to try leaving them off but have been unable to do so.

2. The teachings of some of the more recent American and English text-books will be considered, the list not being complete as only the writer's library was consulted.

It is surprising to see how little is said upon this particular point in these text-books; even men who are well known, from papers read before this Section, to have very decided views on the subject, discussing it in a very indefinite and unsatisfactory manner.

Juler, "A Hand-book of Ophthalmic Science and Practice," 1893. Nothing about low degree lenses.

Roosa, "Schmidt-Rimple, 1889." Notes the necessity of correcting even low degree of astigmatism in presbyopia.

Nettleship, "Diseases of the Eye," 1890. Has only the most general statements concerning the relation of hypermetropia to asthenopia. Nothing as to the correction of low degrees of ametropia.

Tiffany, "Anomalies of Refraction and of the Muscles of the Eyes," 1894. Seems to advise the use of both weak spheres and cylinders in certain cases, but the teaching is not very clear or definite.

Fuchs, "Text-book of Ophthalmology, American Translation," 1892. "The treatment of astigmatism consists in correcting it as precisely as possible by means of cylindrical glasses. In this way distinct vision can be secured and at the same time the asthenopia is relieved." This comprises all he has to say on the subject.

Berry, "Diseases of the Eye," 1893. Speaks of astigmatism of one-fifth or less as a cause of headache in certain cases, and of the necessity of correcting even low degrees of ametropia in such cases.

Noyes, "Diseases of the Eye," Second Edition, 1894, says: "The more pronounced are the asthenopic symptoms the more searching must be the search for astigmatism and the more accurate its correction. Then even slight degrees, 0.5 D. must not be neglected," p. 127. "But it must be emphasized that in susceptible persons small errors, especially hyperopic astigmatism calling for a cylinder with axis nearly vertical or even small degrees of hyperopia demand exact correction. As a fact, we have often to deal with a susceptible organism, and because it is easily set ajar we must remove even minute sources of disquietude." Pp. 197–198.

Norris and Oliver, "Text-book of Ophthalmology," 1893, are most decided and definite in their statements of the relation between slight ametropia and asthenopia and state that the correction of even 0.25 D. of astigmatism is often followed by marked relief of asthenopia and increase in visual power. Pp. 266 and 211.

De Schweinitz, "Diseases of the Eye," 1892. Advises in a general way the use of low degree S. and C. lenses but is not very definite.

The experience and observation of others. To obtain this the author wrote to fifty of those who had replied to the previous letter, asking that each one send notes of two cases for whom these low degree lenses had been prescribed, and that these be cases sufficiently long under observation to show results. Of these thirty-nine replied, most of them sending two or more suitable cases, some sending one and a very few sending cases that can not be used in this paper because not coming within the low degree lenses asked. To all of those, answering either of these letters, the writer wishes to extend most hearty thanks. Many have taken much time and trouble to look up cases and records. That work is appreciated and the author hopes the results will justify the labor. Fifty cases are given below, one only being taken from each contributor in most cases, and sufficient taken from the author's records to make the number an even fifty. While most of the cases are necessarily condensed to bring them in the limit of this paper, an effort has been made in each report to give the exact idea of the reporter and in as nearly his own language as possible. Many of those sending cases wrote that they could easily duplicate those cases by hundreds.

Case 1.—Reported by Dr. H. P. Allen. Miss P. R., age 19; student. General health good, November, 1888. Asthenopia; blurring after using eyes for an hour particularly at night; temporal headaches, not severe. Other members of family have similar eye troubles. V. 20-18 P. P. 3 inches. Correction R. 0.25 C. 30°. L. 0.25 C. 180°. Reported April, 1892, that she had entire relief. "Did not know that glasses could do so much for her."

Case 2.—Mrs. L. N., age 30. Perfectly healthy. September 1891. Reads several hours daily. Severe frontal pain sometimes with occipital pain and nausea after reading half an hour; has been using +0.50 S. without much relief. Orthophoria V. 20-18. Correction + 0.25 C. 90° both. Relief almost immediate. Axes changed to 180° and without

patient's knowledge return of all trouble. Reported 1893: "I always use my glasses for near work. Never have any trouble now."

Case 3.—Reported by Dr. Frank Allport. Miss M. F., age 20. Healthy. Asthenopia, severe and protracted headaches. Competent oculists have fitted various convex spheres. No result. Tenotomy had been advised but declined. I find esophoria 4°. Homatropia correction + 1.25 S. ⊃ + 0.25 C. 90° each eye. Prescribed 0.25 C. 90° each eye for constant use. Patient perfectly well for one year and still wears glasses.

Case 4.—Dr. Frank Allport. G. G., boy. Age 14; good health. Headache in school, almost incessant winking and blinking, blepharitis. Homatropia correction, + 1.50 S. ⊃ + 0.50 C. 90° each eye. Lids treated and boy taken from school for a few weeks. Prescribed 0.25 C. 90° each eye for constant use. Has worn these for two years. Perfect result.

Case 5.—Reported by Dr. G. A. Aschman. N. P., 18. Seamstress. Eyes tire after sewing and smart and burn at night. Headache, twitching of lids, watering of eyes and blurring. Tonics and rest improve condition, but still considerable trouble. Correction + 0.25 D. C. 135° and 45°. Relief immediate and one and one-half years later she still wears glasses constantly for work with complete relief. Broke one lens a few months ago and while having it repaired old symptoms returned, to disappear when lenses were resumed.

Case 6.—Reported by Dr. A. R. Baker. G. E. P., farmer's daughter, age 28. Comes to renew glasses broken for six months. Constant sufferer from headache from childhood till six years ago. She at that time received from me correction + 0.25 D. C. 60° and 120° increasing V. from 20-30 to 20-20 and entirely relieving head. Since glasses were broken, headaches have returned; patient hoped to get along without glasses but could not. Renewal of lenses stopped the headaches.

Case 7.—Reported by Dr. B. Bettman. Dr. E., age 40; busy over-worked practitioner. Tired feeling and frontal headache increasing toward night. Refraction under cycloplegia 1. D.; after recovery accepts 0.50 D. S. These gave immediate and complete relief. Later after vacation and rest he finds them unnecessary and lays them aside.

Case 8.—Reported by Dr. J. H. Buckner. Miss M. H., seamstress. April, 1893. Much headache for two years. V. each eye 20-15. Correction under atropia. R. + 0.25 S. ⊃ + 0.25 C. 135°. L. + 0.25 S. ⊃ + 0.25 C. 45°. Ordered these. Entire relief from headache.

Case 9.—Reported by Dr. H. D. W. Carvelle. Fred N., age 21. Druggist clerk. July, 1888. Left eye enucleated in 1886; R. eye weak; can not read or write without headache and pain in eye so that he was obliged to give up his position. Correction with homatropia + 0.25 S. ⊃ + 0.25 C. 90° with which pain and headache disappeared and work was resumed.

Case 10.—Reported by Dr. Wm. Cheatham. Emma N., age 24. Health good. Nov. 12, 1892. Spots before eyes; discomfort in back of head when eyes are used. Mild conjunctivitis and blepharitis. Treatment for latter ineffectual. Atropia correction. R. + 0.25 D. C. 90°. L. + 0.25 D. C. 75°. Have worn these with perfect satisfaction since. Quickly recovered from the conjunctivitis and blepharitis. Reported a few days ago.

Case 11.—Reported by Dr. J. J. Chisolm. Mr. La C., age 30. May, 1891. Eye and head pains and photophobia. Can not use eyes without pain V. 20-20 and 1-1. Correction = 0.25 D. C. 180° each. These gave complete relief and have been worn since with comfort, but can not be left off for a single day without return of pain.

Case 12.—Reported by Dr. J. E. Colburn. Bertha W., 25. Health good. Frontal and occipital headaches. Blepharitis. Correction. R. + 0.37. 90°. L. + 0.25. 90°. These were prescribed but patient complained of pain in right eye; this lens was found to be 0.25 instead of 0.37. Pretended to change this but patient still complained. Changed to 0.37. These gave complete relief and she is still wearing them without headaches.

Case 13.—Dr. Coleman. Annie S., age 17. High school student. Any study in evening causes eyes to pain. Homatropia correction + 0.25 D. C. 90° each. Seen several times since; says she has absolutely no trouble with eyes if glasses are worn but pains soon return if glasses are taken off.

Case 14.—Reported by Dr. Robt. O. Cotter. Mrs. C. V. W., age 53. Pain in eyes and head on any attempt to use eyes for distance, or for near points with presbyopic lenses. Correction + 0.25 D. C. 90° each eye. These for distance with proper correction added for close work gave complete relief from the above symptoms and have been worn with comfort for four years.

Case 15.—Reported by Dr. J. C. Dunlavy. Miss G. Age 18. Teacher. August, 1891. Good health except almost constant headaches. Dizziness when headache is bad. Profound asthenopia. Correction + 0.25 D. C. 180° both. Within four weeks all pain and asthenopia had disappeared and eyes were used without difficulty. Glasses now used for close work only.

Case 16.—Reported by Dr. J. C. Dunlavy. Miss P. Age 19. College student. August, 1891. So much eye ache and headache she had left school. Correction + 0.25 D. C. 75° and 105°. In three weeks returned to school. Graduated last year and is now taking post graduate course. No trouble with eyes in all this work.

Case 17.—Reported by Dr. Geo. M. Gould. Mr. A. D. E. Age 25. Consulted many oculists in past six years for intense headaches in eyes and temples, and occiput; reading ten minutes would bring on an attack which usually lasted a day. All had given—spheres or cylinders; wearing now —0.25 C. 90°. Mydriatic correction + 0.62 S. ⊃ + 0.37 C. 180° each eye. Use of these lenses gave at once complete relief with ability to read a normal time. This happy condition has continued for six months.

Case 18.—Dr. Geo. M. Gould. Mrs. A. M. W. Age 22. Trained nurse. Been wearing for eight years + 0.62 D. S. Severe headaches, temporal and occipital, recurring of late years once or twice a week. The following correction has been worn over a year with relief of headaches. R. + 0.25 S. ⊃ 0.25 C. 90°. L. + 0.37 S. ⊃ + 0.25 C. 90°. Headache at once returns if glasses are discarded for the shortest time.

Case 19.—Reported by Dr. E. J. Gardiner. Miss P., age 30. May, 1889. From early childhood has been a martyr to most severe headaches, coming on sometimes twice a week and prostrating her for two days at a time. With the lighter attacks she could go about the house, but the "regular attacks" sent her to bed in a dark room. Use of eyes for close work frequently brought on these attacks. All kinds of treatment had been found unavailing. The eyes had been examined and found normal; the headaches had been finally accepted as a necessary evil. Examination of eyes revealed nothing abnormal. R. E., V. 20-20 C. 25 S. a little better. L. E., V. 20-20, 0.25 C. 90° better. Most careful testing under atropia did not change this, so above were prescribed. Headaches began to diminish at once in frequency and intensity, and in these three months patient reported that she had "no more headaches." Six months later when on a long journey glasses were broken and headaches soon commenced again; by the time she got home she had one of her old attacks. New glasses again gave relief; she has continued to use her glasses until last year (1893) and lately has been going without them without any return of the headaches.

Case 20.—Reported by Clark W. Hawley. Miss K. F., 11, school girl. Good health. Occipital and frontal headache from study. Letters get mixed up when reading. Correction + 0.25 D. C. 135° and 45° have given complete relief now one year. Glasses sometimes left off a few hours when old headaches return, at once relieved by resuming glasses.

Case 21.—Report by Dr. C. M. Hobby. Miss E. C., age 18. Asthenopia. V. 20-20 each eye. Under mydriatic R. + 0.25 D. C. 60° 20 = 20 +. L. + 0.25 D. C. 120° 20-20 +. With this correction vision remained comfortable permanently.

Case 22.—Reported by Dr. F. C. Hotz. Boy of 12. Constant frowning; eyes red and lids swelling after reading a short time. Ordered + 0.25 C. 180° each eye. Was relieved. Eyes so well, glasses were left off after a time but in a few days he was compelled to wear them again because the old symptoms had returned.

Case 23.—Dr. F. C. Hotz. Bookkeeper, age 20. After few hours' work eyes burn and smart, and dull headache often compels cessation of work in afternoon. Very sensitive to light; can not read in evening. Conjunctivitis treated four months; improved but other symptoms remain. Ordered + 0.25 D. C. 90° each eye and topical applications discontinued. Now after six months has been working over books every day without slightest discomfort.

Case 24.—Reported by Dr. Chas. W. Kollock. Female, age 29. V. normal. For two years use of eyes for close work causes blurring and lachrymation with pain. Atropia correction + 0.25 D. C. 90° each eye. These have been worn now for six years with relief from symptoms complained of.

Case 25.—Reported by Dr. Peter D. Keyser. Mrs. C. E. D., age 27. Can not read five minutes without lids drooping and a sandy feeling in eyes. Persistence in work causes headache and nausea. Atropia correction + 0.25 D. C. 60° and 90°. Has worn these glasses six weeks and is entirely relieved of her trouble.

Case 26.—Reported by Dr. L. E. Maire. Mrs. E. R., age 31. February, 1893. Nervous temperament. Periodical headaches not relieved by thorough constitutional treatment. Pain in head and eyes daily occurrence, interfering with her household duties. Fundus normal. Homatropia correction —0.25 D. S. each eye. These glasses give entire relief. Latter part of 1893, eyes were very comfortable. Glasses were omitted when headaches returned. Glasses resumed, relief again complete and has continued to this time.

Case 27.—Reported by Dr. Wm. A. Mann. Miss M. H., age 23. Stenographer. Had to quit work on account of "weak eyes." Head and eyes ache after using a short time; type blurs Homatropia correction. R. + 0.25 C. 10°. L. + 0.25 C. 180°. Complete relief from asthenopia symptoms, and says after three months she can't get along without them.

Case 28.—Reported by Dr. J. E. Minney. Dr. C. E. N., age 21. December, 1893. Constant headache, with temporary blindness when headaches are most severe. Correction. + 0.25 D. C. 90° both eyes, gave relief which has continued now four months.

Case 29.—Reported by Dr. B. L. Mittendorf. Miss A. H., age 18. College student. January, 1894. Severe and almost constant headaches for years. Treated by family physician for a long time without relief. One year ago given + 1. D. S.; worn since without relief. Headaches so severe she thinks she will have to give up study. Correction + 0.25 D. C. 180°. January 27, headache very much better. April 20, has lost glasses. Study for one day without glasses has caused return of headaches with great violence. Similar correction again given. No headaches since.

Case 30.—Reported by Dr. W. T. Montgomery. M. De W., age 11. School girl. General health good. Jan. 1, 1891. Smarting and aching of eyes, frontal headaches for four years. Headaches now so severe, she had to give up school. Vision 20/20 either eye. + 0.25 D. C. Axis 25° right eye, and 150° left eye. Vision 20-20. These glasses give complete relief so long as she wears them, with recurrence of headaches if she leaves them off.

Case 31.—Reported by Dr. H. Moulton. Miss S. E., age 24. Teacher. Fair health. Feb. 5, 1894. Eyes used with difficulty for three years. Blurring, pain in and behind eye-balls, constant frontal headache. Homatropia correction + 0.25 D. S. ⊃ + 25 D. C. 90° each eye. These gave immediate and complete relief. Head has not ached since, and patient can read as long as she desires without discomfort, but any attempt to lay aside glasses is followed by discomfort until they are resumed.

Case 32.—Reported by Dr. Thos. E. Murrell. Miss Adah H., age 17. Good health. Headaches and tiresome vision, relieved by + 0.25 D. C. 90° both eyes. One year later wrote she had perfect comfort with the glasses, but leaving them off one day would bring on severe headache.

Case 33.—Reported by Dr. G. H. Price. Dr. G. H. P. (Myself); suffered with my eyes for about ten years, having been under treatment during each year more or less. Almost compelled to abandon college. Homatropia correction O. D. + 0.25 C. ax. 60°. O. S. + 0.25 C. ax. 90°. I have been able to read and study any time, and for hours without trouble, except now and then when I have a heteraphoralgra due to muscular unbalance.

Case 34.—Dr. A. E. Prince. Frank K., age 32. Tailor. 1888 first seen. Conjunctivitis. Various astringents used for eyes. 1891. Gave him + 0.50 D. S., each eye. These gave him some relief but trouble persisted and other symptoms arose. Correction after repeated and careful treating under atropia + 0.25 D. C., axis 180° each. Gave entire relief. He is now able to do a large amount of work by artificial light as well as by daylight without discomfort.

Case 35.—Reported by Dr. Pinckard. Miss M. H., age 17. March 1, 1892. Had been under treatment for headaches over three years without relief. Insists that headaches have no connection with her eyes. Correction + 0.25 D. S. ⊃ + 0.25 D. C. Axis 90° and 80°. No relief for about ten days, after which headaches gradually disappeared. March 5, 1894. Has been able to work without discomfort.

Case 36.—Reported by Dr. Chas. A. Oliver. Dr. ——, age 24. January, 1894. Severe asthenopia and lid irritation, unrelieved by local and general treatment for nearly ten years. Insufficiency of convergence so pronounced, that tenotomy had been advised. Fundi normal. Atropia correction + 0.25 D. C. 25° and +115°. This correction with 2° prisms, bases in, has been continually worn since, enables patient to perform an enormous amount of literary work without eye trouble. Twice through breakage lenses have been omitted for a few days with speedy return of old symptoms.

Case 37.—Reported by Dr. J. M. Ray. G. S., age 34. Druggist. Feb. 21 1894. Headache on use of eyes. Correction R. + 0.25 D. C. 90°. L. + 0.50 D. S. March 6, 1894. Been using glasses with complete relief from headaches, but if eyes are used without glasses, headaches return.

Case 38.—Reported by Dr. S. D. Risley. Miss C., age 26. Art student. March, 1894. Weak eyes, headaches, etc. Correction R. + 0.37 C. 90°. L. + 0.25 C. 90°. At the end of the month reports perfect comfort at her work but is compelled to use her glasses.

Case 39.—Reported by Dr. G. C. Savage. Mrs. M. B. D. Oct. 21, 1892. Ordinary symptoms of eye-strain. Under homatropin O.D. + 0.25 C. ax. 105°. O. S. + 0.25 C. ax. 65°. Reports relief from eye-strain.

Case 40.—Reported by Dr. J. L. Thompson. Physician of rare intelligence and very hard student. April, 1887. Intense sufferer for weeks with head and eyes. Vision 20-30 each eye. No muscular trouble. Atropia correction. Vision 20-20 each eye with + 0.50 D. C. axis 65°. Right, 0.50 D. C. axis 130°, left. Prescribed + 0.25 D. C., axes as above. Benefited in a few days. In six weeks could read all he pleased and has continued to do so until this day. Has several times tried to do without glasses but the old symptoms promptly return.

Case 41.—Reported by Dr. R. L. Thompson. Spokane, Wash. Miss T., school teacher. So much trouble with her eyes that she seriously thought of giving up her avocation. For this I gave her in May, 1893, a pair of + 0.25 D. C. 90°. I saw her yesterday (April 25, 1894.) She is delighted with her glasses and says she has had no trouble with her eyes since she got them.

Case 42.—Reported by Dr. H. V. Würdemann. Mrs. B., age 43. Neurasthenic. Asthenopia and headache, marginal blepharitis and chronic conjunctivitis. Correction + 0.25 D. C. 90° ⊃ 0.75 D. S. for reading. Lenses give satisfaction for reading, but headaches continue. Gave + 0.25 D. C. 90° each eye for constant use which have given relief to this time from all symptoms.

Case 43.—Reported by Dr. H. M. Starkey. Frances G., age 13. School girl. April 7, 1893. Had cerebro-spinal meningitis three years ago. Much pain in eyes and in head particularly at base, when eyes are used since. Very severe paroxysms of headache occur about once a week. Sunlight and lamplight painful. Patient looks dull and forehead is contracted. Correction + 0.37 C. 90° each eye. April 12, no headache with glasses. June 1, no headache. June 13, no headache and light hurts the eyes but little. October 10, has had practically no headache since getting glasses and school has been resumed. The change in facial expression when the glasses were put on was very pleasant to see and she always afterwards came to the office with a smile.

Case 44.—Reported by H. M. S. Miss E. A. P., age 28. Oct. 17, 1893. Severe and almost constant supraorbital headache. Had come to visit the World's Fair but pain is so severe when patient enters the grounds that she fears she must go back home without seeing the Fair. Esophoria 10° and 12°. Homatropia correction + 0.37 C. 180° each eye. These glasses were prescribed and relieved head at once. Miss P. remained in city with but little eye trouble and attended the Fair until November 4, and had but one headache. Esophoria reduced to 6° and 4° by this time without other treatment. Have heard lately that Miss P. continues to wear the glasses with same comfort.

Case 45.—Reported by Dr. H. M. S. H. P. H., age 28. Bookkeeper. Oct. 25, 1893. Eyes tire easily and give out entirely if used much. Feel full of sticks after use. Homatropia correction + 0.37 C. 135° and 45°. These gave entire relief and have been worn constantly since though eyes are used constantly and closely. I see Mr. H. frequently and suggested a short time ago that he might perhaps get along without his glasses now, but he said he is so perfectly comfortable with them that he does not care to try any experiments.

Case 46.—Reported by Dr. H. M. S. Miss M. G. H., age 19. School girl and later teacher. Feb. 21, 1893. Always has had much headache in brow and temples particularly if tired. Dull headache most of the time; worse at evening. Correction + 0.50 S. ⊃ + 0.25 C. 90° each eye. Likes the simple cylinders better and these are given and relieve the head. February 25. Headache relieved completely, but return if glasses are omitted and are again absent when glasses are resumed. May 20, 1894. Has much headache but not of the old character. Headache most intensified if glasses are omitted at all.

Case 47.—Reported by Dr. H. M. S. Miss J. H., age 25. Health much impaired from mitral heart disease. August 15, 1890. Eyes and head have been troublesome and painful

for a long time. Correction + 0.25 C. 90° each eye. These glasses given and headache disappeared within a few days. Patient seen frequently since and says she can not get along without glasses. Seen May 20, 1894. Says leaving off glasses a short time causes headache and if they are not resumed nausea arises.

Case 48.—Reported by Dr. H. M. S. Miss C. M. S., age 25. Eyes have been troublesome for ten years. Severe headache and eyes smart after use. Homatropia correction. R. + 0.50 S. ⊃ + 0.25 C. 20°. L. + 0.25 S. ⊃ + 0.25 C. 160°. After recovery from cycloplegia gave + 0.25 C. 20 and 160°. These relieved head and eyes. Saw patient a number of times in the following two years and she always expressed the greatest pleasure in the use of the glasses.

Case 49.—Reported by Dr. H. M. S. Miss J. W., age 18. Teacher. Health good except headache Dec. 15, 1890. Always had much headache. Worse past year and there has been pain and heaviness in eyes in bright light and after using them. Correction + 0.25 C. 180° R. — 0.25 C. 90° L. These relieved the headache and eye-strain. Have been worn ever since with relief from pain in head and eyes and increased ability to use eyes. Pain returns if glasses are left off.

Case 50.—Reported by Dr. H. M. S. Miss Dora W., age 18. School girl. One of a family of sisters all having slight degrees of astigmatism with much headache relieved by proper correction. Dec. 6, 1889. Always had more or less headache, very severe and almost constant past two years. Correction + 0.25 C. 180°. Dec. 14, 1889. Has not had a headache when glasses are worn. May 15, 1890. Uses glasses almost constantly. Does not have headache when glasses are worn. May 8, 1893. Lost glasses some time ago and headaches have been increasing until they are now very bad again. After examination gave same lenses which again relieved from headache.

WEDNESDAY—JUNE 6.

Section was called to order at 3:10 P.M.

Before the reading of the papers a case was presented by Dr. A. H. Voorhies, of San Francisco.

DR. VOORHIES—Mr. Chairman: You have kindly given me an opportunity of presenting a case which came in this morning unexpectedly. It was an operation which was so applicable to this Section that I asked my friend to allow me to present it here. It is a case of double cataract. Some of the members asked me this morning a question or two in regard to certain methods. I am not going into a long discussion on extracting cataracts, but I will say it has been my habit for twenty-five years of making a simple extraction. Never in the course of my life have I made an iridectomy, without its being an enforced one.

Again, in regard to the point of section, as to whether it should be at the lower or the upper section. I say in the majority of cases that is immaterial—I would as soon operate in the lower section as in the upper. I thought it would be of interest to the Section to see this case and therefore have brought the patient. The case illustrates also the method used now by many, of irrigating freely the anterior chamber, which I do in all cases that require it. If the cataract is senile and the greater portion of it is dense, we have no occasion for irrigation, but in all cases of cataracts in which the upper portion is wholly soft, then we are called upon to irrigate.

In regard to the knife—I have possessed recently some modifications of the cutting knife, that is, of having a very narrow knife, twenty millimeters in length, with a cutting edge one-half of its length on one side and complete on the other. The narrow blade will accomplish all that is to be done in the way of cutting—it can make a wound small or large, according to the section. In case of accident the introduction of the knife the wrong way, without withdrawing the knife, it can simply be turned over and the section finished without bad results.

Again, as to the method of irrigating. I use a syringe which I improvise at the time (showing.) The tube being placed in a bottle and the fluid drawn up into this bulb. In regard to the solution, I used simply distilled water, boiled immediately before the operation or at the time. I do not hesitate to irrigate the anterior chamber freely and have never had evil consequences from it, using distilled water. I have under certain circumstances used a solution of boracic acid, probably 1 per cent., and occasionally, a mere suspicion of common salt, using nothing in the way of bichlorid.

The report of the Nominating Committee was then read.

DISCUSSION ON DR. STARKEY'S PAPER.

DR. H. I. JONES, San Francisco—I agree with Dr. Starkey about his paper. I think a great many of these cases require weak spherical glasses. Most all of them suffer from some neurotic trouble, or some condition which can be cured by constitutional treatment. They are often bilious. Give them some blue mass or a good dose of salts and a little tonic afterwards and they will often get well without glasses, putting on colored glasses in the meantime.

DR. ELLIS—Mr. President: Somebody has remarked quite recently in our medical literature that oculists were getting to be simply expert opticians. I think, Mr. President, our oculists should be expert opticians, but to say they are only expert opticians is to say they are very wide of the mark. There can be no question in this day and generation, when the eyes are called upon for so much work and such continuous work, that they must be under greater strain than they were in times past, and than they are in other countries where individuals are less on the move and more on enjoying themselves. I do not believe that all errors of refraction should be corrected. Many individuals pass through life with errors of refraction amounting to 1 or 2 D., either with astigmatism, or ametropia, without any discomfort and use their eyes a great deal. In the majority of cases, these are individuals in a healthy condition. There are other individuals who have only one-fourth or one-half D. astigmatism, who upon every effort of use of the eyes for close work have a reflex manifestation; frontal, vertical or occipital. Where we have these conditions as the result of eye-work, I think there can be no doubt that the oculist is justified in correcting the trouble. In my own personal experience, I have had more good results from correction of astigmatism of from one-half to one-quarter D. than from greater degrees, simply from the fact that in a low degree we usually have excellent vision, and the eyes are used to the utmost capacity, whereas in greater degrees we have more or less impairment of the vision, and there is not that constant strain that there is in close work where the vision is good. I am heartily in accord with Dr. Starkey in his views.

DR. SIMONTON, San Jose—Mr. President, I have corrected a great many cases of optical error of one-quarter D., and as the gentleman has just said who preceded me, it seems to me that relief is sought in the low degrees than in the high degrees of astigmatism. In the high degrees the eye gives up endeavoring to obtain perfect vision, and hence there is less eye-strain, while in the low degrees the vision being almost perfect, the eye makes every effort possible to make it perfect; hence, the trouble. As to the necessity of wearing glasses—I have not heard it mentioned, but I suppose it is your universal experience that a much larger percentage of females call for the correction of optical errors than males. In my experience, I think it will amount to three-fourths females, if not more. For some reason, there are either not the optical errors existing in the male portion of the race that there are in the female, or else they do not call for correction. Is it because they are stronger or in better condition physically? It would seem that we would have the same amount of optical error in the male portion of our race as the female, but it is my observation that a much larger percentage of females require correction. There is a great difference in individuals.

A gentleman called at my office a few days ago, who was over 70 years of age. He had inflammation of the lids in mild degree and due to eye cyst in some shape. I found his glasses for short range work were two areas. I came to the conclusion that he was ametropic. Upon testing the individual with the letters at twenty feet, he was not ametropic. I suggested that he wear a stronger lens, as he was actually drawing on the axillary muscle, and he has done so since. I think it would be the unanimous expression of this Section if they would express themselves, that the low degrees of cylinder, especially quarterly are beneficial and their use is warranted in hundreds of thousands of cases. It has been mentioned here that persons may wear glasses for a long time and then cast them off and go without. My experience in that line does not indicate that many persons will do it. After the eye has been accustomed to the glass, and the optical error has been corrected, to take off the lens and put the eye under the old conditions brings on the trouble again, except in cases where the general condition has been so improved. Our experience leads us to conclude that very few persons of optical error can cast aside their glasses and not wear them.

Dr. H. B. Young, of Burlington, Iowa—My personal experience is that in a majority of cases, ametropia disappears, so far as the ordinary tests are concerned. I want to ask the advocates of the use of one-quarter D. cylinders to tell me how they determine when they have found a case of one-quarter D. astigmatism. You must oftentimes take simply the judgment of the patient, and we know how unreliable that is. I do not believe we can *measure* it reliably by the ophthalmoscope. In my judgment, those advocating the one-quarter D. cylinder, do so on the reply of the patient himself. I have found, however, that there is one way of getting a little more definite reply in regard to the one-quarter D. cylinder, but I think the cure is worse than the disease. At the meeting of the State Society in my State last year, I presented a paper on this topic, and then called attention to the fact that I doubted if any one person could take the one-quarter D. glass, and on the ordinary test card tell when a one-quarter D. had been removed. They must have a plain glass in front of them to give them the idea of looking through a glass in the first place.

I have found that in nearly every case where a one-quarter D. cylinder was accepted, astigmatism would develop in almost every case. As a result of that experience, I have nominally discontinued the use of one-quarter D. cylinders. This applies simply to those cases which have equal vision. I understand the discussion does not apply to those cases which have very marked ametropia.

Dr. Baker, San Diego—I do not want to offer myself in opposition to the last speaker, but I would like to give my experience in this test. In testing by the use of a wheel, the radiating spokes placed at angles of 10 degrees, the inequality of the wheel can be determined in a large per cent. of these cases, and the inequality corrected and the relief of strain is marked at the time. In my own case, I showed the one-quarter D. minus astigmatism, which without the use of the wheel resulted in a plus astigmatism, the use of the plus cylinder being necessary. For six or seven years of my life I have suffered from migraine of a severe type. For six or seven years previous to the wearing of the glasses, I found that by a strict diet, taking away all meats, I could be reasonably free from the attacks. I put on glasses and worked and in the intervening time I have had four attacks of migraine, as against an attack of once a week or once a month, and these four attacks have been all I had, notwithstanding the fact I have done as much work as I chose. The relief has been absolute, as I am thoroughly convinced. In reference to other cases, I have a number of them, and two of them were absolutely removed by having a one-quarter D. glass. Another case which had been diagnosed tubercular trouble, where there was persistent loss of weight and apparent serious lung trouble, was absolutely cured by the having of a one-quarter D. glass. I used atropin five days. I could only get the test with the wheel; I could not make it by the test pad. After putting the glasses on I told the patient I was disappointed, inasmuch as there were errors which could not be corrected by glasses, and on taking the glasses off the patient immediately complained of nausea; on putting them back again the nausea disappeared. And after wearing the glasses the condition of nausea disappeared absolutely. Within a few days the case disappeared entirely and the patient gained fourteen pounds in weight, and has been absolutely well since. The eye trouble may not have been the original cause of the disturbance; this is evidenced from the fact that for the last year she has been in perfect health without her glasses. But there can be no question that the relief was immediate at the time, and that the cause was the fitting of these glasses I see no reason to doubt.

Dr. Ryan, Galesburg, Ill—The remarks made have called into question the possibility of getting a correction by plus 25 or cylindrical 25. I have had considerable experience in fitting glasses in the last few years, and find it a very easy matter to make complete correction by the use of cylindrical 25. The ordinary patient would not be able to detect any particular difference in the letters, but if you use the wheel, as has been said, you can nearly always make a complete correction. You can not do it if the letters of the wheel are very close together, but if the wheel is very distinct and the lines are four millimeters apart you can always do it. I have a record of cases in which I am positive that dozens of them have been fitted in that way, and the difference could be noted instantly if we changed from 25 to 50, or *vice versa*. I have seen it so often that I am positive that the ordinary individual can detect those differences where we use a wheel which is clear and distinct, and the lines far enough apart so that you can easily recognize the lines. Where the lines are close together, it is in my opinion impossible, because there is a slight blur.

Dr. Price, Nashville—I rise to add my testimony to that which has been spoken on this subject. I received a communication from Dr. Starkey and one of the cases I noted in the reply was striking. That case required only the correction of twenty-five-hundredths of astigmatism, and as with the cases related by the doctors here, it seemed as if the case were too serious to be accounted for by so slight a deviation from the normal; nevertheless, the correction was given and the patient was entirely relieved.

Another case that is striking is my own. I had suffered for many years,—I was almost compelled to abandon study when quite young on account of eye trouble. I was treated at that time by various general practitioners, who treated me for all troubles and conditions from granulated lids, as they supposed I had, with a firstrate attack of conjunctivitis, and I received no relief. I went from bad to worse for about ten years, when I had my vision corrected. At that time it was an absolute impossibility for me to devote exceeding fifteen to thirty minutes to consecutive reading at night without suffering from eye-strain. After that time, and since that time, I have been able to read almost indefinitely and what work I feel disposed to do I can do. If I confine myself to work for several hours consecutively without my glasses I feel the effect of it, but as long as I use them in proper position so as to get the benefit of the cylinder correction I proceed with my work without serious interference.

So, I am of the opinion that very frequently the great

trouble lies in the fact that men presume that it is useless to make these corrections, and they do not give the patient the benefit of the correction. It is difficult to determine to the one-half D. whether they should be corrected or not, but I think by careful observation we may be able to determine it. As the gentlemen who have preceded me have said, it is almost impossible to do this by reference to the letters. We must resort to the radiating letters, and in this way we can arrive at the proper direction in nearly every case. I do not attempt to place the position of the axis by the cylinder, if that cylinder is less than 75, but get the axis with a stronger cylinder and then reduce the cylinder to the required strength. As to the value of those lenses, I have every reason to have faith in them on my own account.

DR. DAVIS, Stockton, Cal.—The last speaker suggested the idea of putting a stronger cylinder before the eye to locate the angle. I want to suggest that where I could not find any effect I have reversed the cylinder. Put the cylinder in at 90, turn it quickly and it very materially hurts the vision.

DR. MCDERMITH, Colorado—Mr. Chairman, on account of the confusion that exists in the minds of the profession, growing out of the editorial alluded to in the paper, and also the replies that have been made, and inasmuch as there seems to be somewhat of a unanimity on this subject, my experience (while it is not very extensive) certainly accords with that of the gentleman who read the paper and the most of those who have taken part in the discussion. Inasmuch as confusion exists and probably will exist, it seems to me that it would probably not be out of order for this Section to place the stamp of its approval in some way so as to make it more emphatic on one side or the other, and I move you that it is the sense of this Section that it is in accord with the paper presented by Dr. Starkey, meaning that the criticism of the editorial is about the proper thing.

This motion was seconded and a rising vote called for.

DR. SIMONTON—Mr. President, just one word of confirmation. The gentleman at my right said that by using the 4 D. cylinder, it would not improve the vision. If we turn the 4 D. cylinder at right angles to the supposed proper margin, invariably it hampers the vision, if a person has astigmatism—turn it back and the vision is improved at once. If we have one-fourth D. astigmatism, and take a one-half lens, it will be more so and there will be no doubt about it, thus determining that there is astigmatism and the vision is greater when the cylinder stands in one position than when it stands in any other position.

DR. YOUNG—That is my point—if there is a 4 D. astigmatism and you turn a 4 D. lens to the opposite axis, it will give the effect of a one-half D. lens.

DR. SIMONTON—I have put the motion in the form of a resolution, which is as follows:

"*Resolved*, That it is the sense of this Section, deduced from actual observation and experience that the one-fourth D. cylinders have a permanent and important value in correcting myoptic errors."

I offer that as an amendment.

DR. MCDERMITH—I offer the amendment, "may have," without committing ourselves to the assertion that we believe in every case.

THE CHAIRMAN—It is rather an important matter, if we are going to pass a resolution, that we do it in such a way that we will not be ashamed of it afterwards.

DR. JACKSON—Mr. President, with reference to this resolution, while I am thoroughly in accord with the views of the speakers, and the gentleman who offered the resolution, as to the value of the remedies, I think that a formal indorsement on any grounds of any measure in therapeutics would be entering upon dangerous ground, and establishing a precedent that may trouble us in the future, and unless such an expression is clearly needed and meets some emergency, with which I am not acquainted, I think it would be better for the Section not to take such formal action.

DR. EATON, Oregon—Mr. Chairman, I wish to emphasize what Dr. Jackson has said. There are many other points in ophthalmology which may come up and might require some sort of resolution, and we would find ourselves making resolutions until we become the laughing stock of our brethren. I therefore enter my protest against this resolution.

DR. GIBSON—What would we say of the Section in Materia Medica, if they should adopt a resolution similar to this one, saying that calomel in one-twentieth grain doses has its merits.

DR. PRICE—I would suggest that this is a thing which can be demonstrated mathematically, and that can be demonstrated only by the individual case.

DR. MCDERMITH—I do not think that question has been raised. And it is not likely to be—the question of one-twentieth of a grain dose of calomel.

DR. BRIGGS—Mr. President, I do not favor this resolution from the fact that it is a matter of opinion largely. In regard to this opinion, I do not think it has been demonstrated as a positive fact that the 4 D. lenses are of so much value or so essential that it is necessary for us as a Society to resolve that they are beneficial. We can use them and believe in them and find them good in a good many cases, but I think the resolution would be rather a backward step for this Section to adopt. It seems to me the almost universal indorsement of the paper itself is a sufficient indorsement of this Section, without the adoption of a resolution.

DR. STARKEY—I think the resolution is hardly necessary. I do not think it would make any difference with those who do not use them. I move that the resolution be laid on the table.

This motion was seconded.

THE CHAIRMAN—The motion has not been stated by the Chair, and I think there is no motion before the house.

DR. STARKEY—There have been several things brought out in the discussion, much more emphatically than I had gone over them. I should like to say, in the line of argument of the gentleman who spoke second, that more good results from low degrees of correction are found. That was expressed by the doctors in their replies—that they found in a given number of cases more cases of a low degree of error in which correction was made, than in the higher degrees. Dr. Simonton spoke of the constitutional test as being important, and I also dwelt somewhat upon the fact that I thought most of these cases, if they could only stop work would get well without glasses. His experience in regard to females being in larger proportion is somewhat different from mine, probably because I have a large number of medical students who raise the proportion, so that I should think I had fully as many young men as women on my records. The fourth speaker said he thought it would be the unanimous sentiment of this Section that the low degree lenses are of great importance—that lenses were seldom omitted after being worn. That is not according to my experience. It is to be hoped in the low degrees, that when the general health improves the ocular health will improve, and they will be able to leave them off, especially in the students and school children, and in book-keepers who get through with their work, so that the eyes are not used so much at the end of the day. I think the statement of Dr. Young that you can not tell within one-fourth D. was answered by others. One point you must have noticed, and it has not been alluded to, is the expression of the patient's face. How often you see the patient with that characteristic appearance of asthenopia, the corrugated brow, the

scowl—and when the 4 D. lenses are placed before the eye at the right angle, the face clears up and the physician can tell by the expression of the patient's face that you have something beneficial, and the patient returns to the other condition if the lens is reversed. In the test for astigmatism, the test by the radiating wheel, the reflex or shadow test was entered into quite fully. I know that persons become so expert that they can tell readily a one-fourth D. astigmatism.

ASTHENOPIA.

Read in the Section on Ophthalmology, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY C. M. HOBBY, M.D.
IOWA CITY, IOWA.

Asthenopia is to the visual function what dyspepsia is to the digestive, a congeries of symptoms differing somewhat according to the pathologic views of the physician in charge, and often like dyspepsia cured by the physician instead of by the prescription. As ordinarily employed, without reference to pathology, it comprises several groups of symptoms following the more or less prolonged use of vision at short range, but it is sometimes made to cover uncomfortable vision at all distances; the same symptoms occurring to a presbyopic patient are not usually considered asthenopic, although some logically include unrelieved presbyopia with asthenopia. Not infrequently reflex disturbances, unconnected with the visual organs, are considered as asthenopic phenomena; blepharitis marginalis, which is apparently frequently caused by refractive errors, and mild forms of conjunctivitis, are sometimes considered as symptoms of asthenopia rather than as causes for the ocular discomfort. Accepting hyperopia, especially when associated with astigmatism, as a cause for headaches, and even of the more violent migraines and hemicranias, and believing, as we may, that epileptic attacks have ceased after the correction of refractive error, do we not recognize under all these circumstances that the refractive error is only one factor in the cause, and that back of all there exists a predisposing systemic condition?

Without attempting to describe or define all the symptoms which are grouped around the term asthenopia, patients complain of "sandy feelings," "itching," "smarting," "sticks in the eyes," etc.; symptoms due to hyperemia of the conjunctiva, frequently accompanied by redness, lachrymation, and photophobia; again patients describe their difficulty as "pain in the eyes," "pain over the eyes," "drawing of the eyes," "brow ache," "headache," "shooting pains through the head," "hemicrania," "migraine," etc., some complaining that the pain comes on at once if they begin to read (or use the eyes at short range); others that they feel it if they use their eyes for half an hour; others who persist in reading or in work, especially sewing girls, that they have headache every afternoon except Sunday afternoon; these are the symptoms of overwork and occur normally when the individual uses the eyes too long, just as fatigue follows any excessively prolonged exercise; occurring after only a moderate amount of work, these symptoms are especially entitled to be called asthenopic. Another group of symptoms frequently referred to by patients concerns the visual act; "blurring after reading for a time," "have to change the position of the book," "see spots moving across the page," "sometimes see double," etc., and this group, like the last, may represent the effects of overwork, or when the symptoms occur after only moderate use of the eyes the symptoms may indicate disordered muscular coördination of either the intrinsic or the extrinsic muscles of the eye.

It would be of decided advantage if the term, asthenopia, could be restricted in its meaning to the effects produced by the use of one or both eyes burdened by some abnormal increase in the muscular labor of vision; that is, some burden upon the accommodative function, internal or external; but the symptoms called asthenopic occur in perfectly normal conditions, at least so far as the visual organs are concerned, and we are compelled to consider these cases with others.

No special form of refractive error appears to predominate in asthenopic cases; out of 1,205 cases of refractive error applying for relief from all causes, 58 per cent. complained of asthenopic symptoms; that is the continuous exercise of vision was accompanied with more or less discomfort. Of these cases, 77 per cent. could be considered hyperopic, and 23 per cent. myopic; 31 per cent. had hyperopic astigmatism and 14 per cent. myopic astigmatism; that is 45 per cent. of the asthenopic cases were astigmatic, against 40 per cent. of all cases, showing that asthenopic symptoms occurred in a little larger percentage relatively of astigmatic cases; but this is because the low grades of astigmatism, where there is little impairment of vision, only come under the observation of the ophthalmologist when the patient is suffering from some form of uncomfortable vision.

When we come to consider the great number of cases who have defective vision, from refractive and other causes, but who never complain of those symptoms called asthenopic we are forced, I think, to the conclusion that asthenopia indicates inadaptability to environment, and that it is the individual and not the eyes that are asthenopic. What is true in regard to errors of refraction is apparently true of the so-called muscular asthenopia; while records of heterophoria are not so extensive and the observations made lack the ripening effect of time, and while as in astigmatism of low grade the subject of heterophoria does not consult the physician unless there exists some form of uncomfortable vision, enough observations have been made to show that heterophoria without asthenopic symptoms is sufficiently common, and to lead to the belief that it is not to the muscular insufficiencies alone that the occurrence of asthenopia of the variety termed muscular is to be attributed.

When we observe the different expedients that at times afford relief to asthenopic symptoms, the same lack of coherence is to be found. Patients will often report that they have great relief from glasses that have increased instead of diminished refractive error; the spur of necessity often banishes difficulties of this kind; the uterine specialist, the rhinologist, and the electrician all number asthenopia among the ills relieved by their special methods; and tenotomies that have increased heterophoria have in some manner relieved discomfort.

As asthenopia is not a necessary result of any of the various conditions to which it has been attributed, and is yet often cured or materially improved by relief or attempts to relieve real or imaginary causes of increased effort, or by training the internal or exter-

nal muscles of the eye, as well as by systems of muscular exercise, we can not do too much towards establishing some basis for efforts at relief that shall be less empirical, without substituting a dogmatic physiology of the function of vision. And it is well at this time to protest against the tendency to consider everything connected with the visual organs, as governed by inflexible mathematical formulæ. The evidence is not in, which compels us to believe that the muscles of the eye are innately endowed with certain coördinative functions, or that they have a brain center which is prepared to correlate their movements without the necessity of the training that experience gives, or that their functional activity is exerted under different laws from those governing the rest of the muscular system. It may be believed that the coördinated movements of the muscles of the eyes to perform a given task is the result of the same kind of practice, the same kind of training that pursued through a long time gives to the fingers and hands of the typesetter or the musician their distinctive skill, the same kind of training and experience that the babe must go through with before standing on its feet and walking.

A man accustomed to the work may saw wood for ten hours, a woman may busy her fingers in knitting for the same length of time, but the man unaccustomed to the saw would soon find back and arms complaining of the unwonted labor, and the inexperienced knitter would soon feel fatigue in the fingers; the same is true with those who attempt to use the eyes at new and prolonged tasks; the adult whom will or circumstances kept from studious habits in early life, suddenly attempting to make up lost time; the woman who is suddenly deprived of her means of support and who attempts to gain her livelihood by sewing; the active man who attempts to confine himself to book-keeping; all of these are likely to exhibit asthenopic symptoms whether they have refractive error or not; correcting visual disorders is of undoubted service to them but complete relief awaits their adjustment to environment.

Another numerous class who continually excite our sympathies, and who are preyed upon by spectacle vendors are those who are attempting to work with their eyes for lengths of time out of all proportion to their physical strength; seamstresses who ply the needle from 7 in the morning until 6 at night, and desire glasses to enable them to put in extra hours by artificial light; such cases, like some opticians, look upon the eye purely as an optical apparatus that only requires a little mechanical adjustment to go on with its work.

Ill health is a fertile source of asthenopia, and with impairment of general health we find refractive errors assume a greater importance than would otherwise have been the case; here relief of the ocular strain often proves to be not only an assistance to the use of the eyes but also to the efforts to improve the general health.

Sometimes an individual is unable to concentrate his attention upon the work in hand and uses the eyes at irregularly varying distances, and in various positions as to light and direction of the object looked at, and thus multiplying work unnecessarily, suffers from fatigue where systematic work would have been borne with ease; the student who without interest pursues his task and constantly suffers may become interested in a novel and spend hours with no symptom of "eye-strain;" there is less likelihood of fatigue when the mind is on the work, and there is much less irregularity of muscular work.

But in recognizing asthenopia as depending upon something more than disturbance of the purely mechanical part of vision, it is not necessary to reject the assistance afforded by mechanical measures in the treatment. We can believe that the most perfect possible adjustment of glasses will often fail to cure asthenopia, and that a large proportion of cases can be cured without glasses, without at all underrating the use of optical appliances. While fortunately, we are unable to trace very grave pathologic changes to misfits in spectacles, yet it seems as though it were time for the medical profession to call a halt upon the indiscriminate optical treatment of asthenopia by those who have no knowledge of general pathology, or even physiology, and who consequently see in "eye-strain" only disorder of the looking-machine. Where rest is needed, and where exercise and training are required, where asthenopia is a symptom of a general disorder, or where a patient numbers fatigue of vision as only part of general nerve disturbance, equally with the optical imperfections that take from the patient that soundness of body which with the sane mind is required for the perfect use of all the senses as well as all the muscles, all these conditions fall within the province of the physician and are entitled to his thorough scrutiny.

CYCLOPHORIA, ITS DETECTION AND TREATMENT.

Read in the Section on Ophthalmology, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY GEO. H. PRICE, M.D.
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Cyclophoria or the rotary tendency of the eye upon its antero-posterior diameter under certain conditions, known also as insufficiency of the oblique muscles, is now a matter of record upon the case-books of so many, as to no longer be a question of speculation. When the question of insufficiency of the obliques in certain cases of oblique astigmatism, was first presented and fully elucidated by Savage, of Nashville, Tenn., there was in the minds of some room for doubt as to the verity of the statement, but I am now ready to believe that this statement is received as a fact, by those who have given the question sufficient thought and have applied to it those tests which we now have at hand for demonstrating this condition.

For a long time only the grosser errors of balance of the obliques were considered of importance, and the methods of arriving at conclusive evidence were of such a character as to render it difficult, if not impossible, to bring out this defect unless well marked, or the patient was of that class of observers upon whose statements one can rely with certainty. These difficulties have been overcome, and the means of detecting the condition have been so much simplified that to-day we can not only detect but determine in degrees even small variations from the proper adjustment of these muscles.

Cyclophoria is not only found in oblique astigmatism, where we would naturally expect it, but is also present in many cases where there is no obliquity of the astigmatic condition and also in cases in which

there is no astigmatism at all; so we must conclude that it is not only a complication in some but in all forms of focal error, to such an extent as to cause it to be looked upon as an important factor, which requires us to exert ourselves in detecting and applying the necessary treatment. I have compiled a table of two hundred cases from our case books, showing the various forms of focal error and the muscle conditions complicating each, as well as the percentage in the whole, of each muscular variation. This condition as a causative factor in the symptoms of eye-strain is of prime importance, for if neglected, though all other conditions have received proper consideration and have been eliminated from the catalogue of complications, yet there will be complaint from your patient until you have met this feature and applied the proper treatment. Hence it becomes necessary to recognize the cyclophoria and be prepared to give your patient the benefit of treatment which can be successfully carried out.

It is now a well established fact that the tests for exophoria and esophoria must be determined before the use of a mydriatic, since the suspension of accommodation alters these muscular relations to such an extent as to mask the true condition, but in the case of cyclophoria the test can be made before and also after suspension of accommodation and the result relied upon as trustworthy; however, it is well to note it both before and after use of homatropin or atropia, to be satisfied upon this point.

The causes of cyclophoria, like those of other phorias, are dependent upon a variety of conditions, one or several of which may obtain in the same case.

I will call your attention first to that cause which gave the initial impetus to investigation in this line, viz., oblique astigmatism. In the first place, it is to be noted that if the astigmatism is of such a character that the meridians of greatest curvature diverge above, the superior obliques are kept constantly in a strain in an effort to converge the naturally vertical meridians so that corresponding portions of the retinæ shall receive the same impression. This constant effort induces fatigue or wears out the normal contracting power of the superior obliques and thus induces an insufficient action, relaxation or cyclophoria.

Again, as the inferior oblique acts in conjunction with the inferior rectus, and is augmented in its action by the action of the former, and as the inferior rectus is constantly in action during all efforts at near work, an extra amount of duty is hereby imposed upon the superior oblique, which extra work it frequently finds impossible to sustain, the failure manifesting itself in cyclophoria. This complementary action of the inferior rectus can be easily demonstrated, and has been noted heretofore, hence it is a factor in cyclophoria of that variety involving the superior oblique.

Again a faulty insertion of the external and internal recti will augment one or the other of the obliques in their action, thus becoming a factor in the production of this condition. This condition of variable or faulty attachment has been observed by all who have operated on the tendons of these muscles. If the tendons of these muscles are inserted more below than above the horizontal diameter of the eye, then we find that the internal rectus augments the action of the inferior oblique while the external rectus will assist the superior oblique, but as cyclophoria manifests itself principally when the eyes are in a state of convergence, when the internal rectus is stimulated into action and the external is in a state of more or less relaxation, we can readily see that as a result the muscular equilibrium of the obliques is overcome and the superior muscle fails to accomplish the extra duty demanded of it.

If we should have these muscles placed correspondingly above the horizontal plane, then the reverse would obtain.

So also can we find that faulty attachments of the superior and inferior recti may complicate the action of the obliques.

Faulty attachments of the obliques themselves are to be considered as factors; especially is this probably the case with the superior, since there are two points at which faulty adjustment may creep in, viz., their insertion on the globe of the eye and their physiologic origin, the trochlea. The latter may become elongated from protracted tension, or it may be located too far posteriorly, either of which conditions would result in deficient action. Failure of development of the obliques, or lack of innervation may also be remembered as probable causes of insufficient action. It is, of course, a difficult question to decide as to the immediate complicating causes of each case, but then the probable factors may be held in mind.

A very noticeable fact, in the study of this condition, is the frequency of that form involving the superior oblique and the rarity of that in which the inferior oblique is involved.

From a table of two hundred consecutive cases, taken from our records, before alluded to, I find cyclophoria, insufficiency of superior obliques, in 25 per cent. of all cases (the same percentage has been noted by others) while there is but ½ per cent. of cyclophoria in which the inferior oblique is at fault. There must be a reason for this and I think it can be accounted for in the following way:

The third nerve, known as the motor oculi, presides over the greater portion of the muscular machinery of the eye and is that nerve which is called upon most frequently. In convergence and accommodation there is direct stimulation of all of its fibers except those which supply the superior rectus, hence we see the inferior oblique augmenting the action of the other muscles while the superior rectus, a part of whose duty it is to antagonize the inferior oblique and inferior rectus, is in a state of relaxation, partial or complete.

Again the superior oblique by its action aids in depressing the cornea, by drawing up the posterior part of the globe, at the same time producing slight abduction, and in this very fact while aiding in a general way, also partially counteracts, its own special function. How is this accomplished? In producing abduction it tends to turn the entire anterior part of the globe outward, but in this it fails, for the lower half is prevented from making this outward excursion by the combined action of the inferior and internal recti and inferior oblique. In this I think we have a sufficient reason, and it seems to be borne out by the additional fact that those who make near use of their eyes are those who suffer most from cyclophoria of this type, though there are exceptions.

Let us now look into the question of detecting the presence of cyclophoria in any given case. After

having tested the lateral muscles, before homatropin or atropia has been instilled into the eyes, and these are noted for the near and distance, then with the same double prism in front of one eye, thus producing a double image in that eye, we hold a card (on which we have a well defined red or black line) in front of the patient. The eye in front of which is the double prism will see two lines upon the card while the uncovered eye sees only one line. The card must be held in a plane parallel to the plane passing through centers of rotation or tangent to the corneas of the eyes, otherwise the two lines seen by the eye, in front of which is the double prism, will not be parallel. Now if there is no defect in the balance of the obliques then the middle line is parallel to the other two lines, and is half way between them (provided there is no hyperphoria or cataphoria) but if there is insufficiency of either of the obliques then the middle line will dip at one end or the other, according to the condition present.

If the double prism is in front of the right eye, the two images being seen by this eye, and the middle line seen by the left eye, is inclined to dip at the right hand end, then we know at once that the superior oblique of this eye is failing to do its duty, thus allowing the perpendicular meridian to rotate outward or the horizontal upward at the inner extremity, where the line is seen to rotate or move in the opposite direction, that is downward at the right end. If this dip is but slight the eye will adjust itself so quickly to the faulty condition by a demand upon the superior oblique, that the patient may fail to discover the lack of parallelism with certainty. Instruct him to close both eyes gently for a few seconds, this rest causing the muscles to assume their ordinary relations, then when he opens them tell you if the lines are still parallel. This little procedure takes the eyes off their guard, consequently when he opens them if the cyclophoria is present the middle line will be seen slightly dipping, but soon the guiding sensation of the retina calls upon the oblique and after a few slight oscillations it may assume a parallel position, or so nearly so as to render it difficult for some to discover the lack. If there is reason to suspect the presence of cyclophoria, and your patient is not a careful observer, then we have a proof test which can be applied with much satisfaction. To apply this test the frames should be adjusted to the pupillary distance of the patient, then with a cylinder, say 2 D. in front of the eye being tested, (which is the left in this case) having the axis at 90°, which position does not affect the result, turn the cylinder to 100°, thus throwing additional strain upon the superior oblique, and almost immediately the patient will say the line is dipping to the right. If now the cylinder is brought back to 90° the lack of parallelism is still observed and it will have to be moved to, say 80° or 75°, before the middle line will come up to its proper position. In marked cases of this condition the 2 D. cylinder, and in some rare cases, even a 3 D. cylinder must be rotated to 45° before parallelism is established and maintained. In case the inferior oblique is deficient the dipping is reverse; that is, in the left eye the middle line dips to the left, therefore in case the proof test has to be applied we would have the reverse position of the cylinder in the foregoing. If the condition is suspected and the proof is applied, the cylinder being turned to the right or 100° and then to the left or 80° and the same amount of dip, first to right and then to left is noted, we conclude that there is no cyclophoria.

There is another test for this condition which I have devised and used in a crude form in some cases, which may prove of service. The testing apparatus is a combination of the double prism and the Maddox rod in front of one eye and the rod in front of the other, and is used in conjunction with the candle or gas-jet at twenty feet. The double prism converts the single line of light made by the rod into two lines, which lines are parallel and about 18″ apart, while the rod alone in front of the other eye produces a single line of light, which should be half way between the upper and lower lines (provided there is no hyperphoria or cataphoria) and parallel to them. If cyclophoria is present there is a deviation or dip which will be of the same character as that shown by card test at eighteen inches. This little device I present for your inspection. Though this condition at first was looked upon as one to which no treatment could be applied, yet I am glad to say that through the study and investigation of my friend Savage we are now in possession of a plan which in our hands has proven most satisfactory, and to this I will now direct your attention. It will be remembered that in making the test for detecting cyclophoria we made use of a cylinder, by means of which we can increase or lessen the strain upon the oblique muscles. This principle is made use of in the treatment of this condition.

It is a well established practice now to exercise the recti muscles, and this is done by gradually increasing the strain upon the individual muscle by the use of prisms so placed as to call the muscle into action, and the same plan is followed in the case of the obliques, but we use the cylinder instead of the prism.

If the patient under treatment is suffering with cyclophoria superior (insufficiency of superior obliques) we then with a cylinder of 1.50 D. in the frames, and the patient looking at a light fifteen or twenty feet distant, we begin by turning the cylinder in the right to 75° and that in the left to 105° (thus putting the superior obliques slightly upon the strain) and instruct the patient to raise and lower the frames every four or five seconds. Looking through the cylinders at the light induces slight action or contraction of the obliques and raising the cylinders allows them to relax. This is continued for say five minutes, after which the cylinders are again turned, in the right to 60° and the left to 120° and the patient put through the same exercise as above mentioned, continuing it for three minutes. This causes increased action by reason of the fact that the cylinder in this position causes greater strain upon the obliques in their effort to overcome the greater deviation from the normal condition. Finally the cylinder in the right is turned to 45° and in the left to 135°, and the exercise repeated for two minutes. This position of the cylinder causes the maximum strain upon the obliques. If the cyclophoria is inferior, or insufficiency of the inferior obliques, then we pursue the following method of exercise:

With frames on and cylinders in them, we place the cylinder in right at 105° and in the left at 75° and exercise as before directed by raising and lowering the cylinders in front of eyes while patient looks at the distant light. Then move cylinders to 120° in

right and to 60° in left, and finally to 135° in right and 45° in the left. This exercise should be taken twice daily for a time, though the amount of exercise may be varied according to the symptoms manifested by the patient; for instance, if the patient complains that the exercise causes pain, then instead of taking the full amount, this can be altered to suit the case; thus allowing him to exercise only one-half or even one-third of the time divided between the three steps, or even allow him to exercise for the full time with the cylinders in the first position, and gradually increasing as the patient will bear it.

It will be well to bear in mind the fact that the symptoms of which the patient has been complaining will in many cases disappear before his cyclophoria does, hence it is well to keep him under the influence of the exercise for some months, resorting to it daily or every other day, or even once a week. This treatment has proven of the greatest benefit to many patients upon whom it has been tried, and I have great confidence in it.

We must keep in mind the fact that cyclophoria is a condition which must influence us in the adjustment of lenses, and especially those in which we find a cylinder needed for the correction of astigmatism. While in cases where the axes of the cylinders are seemingly at 90° in each, when the eyes are tested separately, both with lenses and ophthalmometer, yet we may find that the cyclophoria, say of the superior obliques, may prevent the comfortable use of the glasses if the axes are allowed to remain at these points. More particularly is this the case if you have noted any disposition of the cylinder in the right to go toward 100°, and that of the left toward 80°, which positions would be favorable to the weak superior obliques.

Again, if your ophthalmometer shows in the right the position of the cylinder to be, say 100° with tendency to 105°, and in the left the axis is to be at 80° with tendency to 75°, and the test lenses showing the same tendency on the part of the cylinders, it will be advisable to place the cylinders at 105° in right and 75° in left, thus removing the strain from the obliques, and at the same time correcting the astigmatism. If the axes of the cylinders converge above, from the nature of the case this increases the strain upon the superior obliques, and consequently this must be remembered, and due allowance made for it. In such a case say the cylinder in right by the ophthalmometer should be at 60°, and in left at 120°, that is the axes converging above, and that test lenses confirm this, but that the cylinder in right tends to 65° or 70° and in the left to 115° or 110°, then it would be good practice to favor this by placing the cylinder at 65° in right and 115° in the left, thus decreasing the convergence, thereby removing a part of the strain from the superior obliques. Unless these points are watched discomfort follows, as I have learned by experience. A case or two bearing on these points may be of service:

V. S. P., real estate agent, came complaining of his eyes. He was using lenses which were unsatisfactory. Under homatropin his condition was as follows:

O. D. V. 20-xx w. + .25 ⊃ + .50 cyl. ax. 80°.

O. S. V. 20-xx w. + 1.50 cyl. ax. 90°.

Each eye was tested while the other was covered by disc. These lenses were given him and he began to use them. In a short time he found the left eye so painful as to hinder him in his work. This lens was changed and had substituted therefor + 50 ⊃ + 1.00 cyl. ax. 85°; this position of axis seeming to be preferred at this time. This was much more comfortable though vision was not so good. After a time we put in the + 1.50 cyl. ax. 85°; this gave him comfort and good vision at the same time. You see this allowed the axis to converge less above, thus reducing the strain on the superior oblique which brought the ease. We did not fully appreciate the significance of this at the time, but now since we know the part played by the superior obliques in such cases it is apparent. We noted later cyclophoria superior.

Another interesting case is that of Mrs. B. H. R., who consulted us about her eyes; this was about the same time as the above named patient. She was refracted and the following record made:

O. D. V. 20-xx w. + 1.00 cyl. ax. 70°.

O. S. V. 20-xx w. + .50 ⊃ + .50 cyl. ax. 110°.

This was given for distance and a 2.00 D. each for reading to be worn in front. This was in 1891 and the patient, who resided out of the city, was not seen again until a few weeks ago, when she stated substantially as follows: Can not use the distant glasses all the while as they cause pain in eyes, most marked in right (where she has the strong cylinder at 70°, increasing the strain upon superior oblique). Has been more comfortable with a simple + 2.25 used for near work. Cyclophoria superior being present, and detected at this time, she was put on exercise for same, and told to use her glasses for distance.

Two weeks later she reported again with some improvement but not comfort as yet. At this time the cylinders were revolved in the frames, the right to 80° and the left to 100°, exercise continued, and patient to report in two weeks. The two weeks having passed she reported, and her condition was flattering; the annoying symptoms having subsided and she was wearing her distant lenses all the time. The cyclophoria being also reduced by the exercise showing increase in strength of the superior obliques, the lenses were turned about 2° back toward their original position.

The last case to which I will call your attention is that of Mrs. T. M. O., who came complaining of the ordinary symptoms of eye-strain. Under homatropin we found the following condition:

O. D. V. 20-xx w. + .75 cyl. ax. 90°.

O. S. V. 20-xx w. + .50 + .75 cyl. ax. 90°.

Four degrees exophoria in near, before use of homatropin. Cyclophoria superior, slight. This correction was given her and she was put on exercise for the exophoria as this was looked upon as probably the most annoying factor in her case. When she received the lenses and began the use of them they gave her trouble. She applied to an optical company and their refractor gave her a cylinder for the left of + .75, the axis being at 75°. This gave her relief since the position of this cylinder took the strain off the weak superior oblique and put it on the inferior, which was more able to perform extra duty. In this case it would have been better to diverge the axes in both, placing the right at 95° and the left at 85°. It must be remembered that this change in the position of the axes of cylinders where cyclophoria is present should be used only as a temporary means of relieving the symptoms (for it does not remove the cause), until the insufficient obliques can be brought up to normal activity by the proper exercise. Hence the lenses may be turned in the frames to induce comfort, while the exercise of the obliques is resorted to, and as the obliques recover full power the lenses can be gradually revolved to their original and correct positions; then with exercise, as may be demanded by the case, we should expect to see the patient get complete comfort.

There are in these cases, as in all cases, factors of individuality which can only be known and watched by the physician in charge, and upon close attention to these will often depend our successes or failures.

DISCUSSION.

DR. EATON—In my paper yesterday I put myself plainly on record as opposed to this theory of cyclophoria. It is hardly worth while to go into detail. I wish, however, to present two arguments which I did not present in my paper. There are a very large number of men in the profession who do not believe in this theory, far more than I think the reader of the paper will admit. One of the greatest reasons I have brought against this theory is the inability of many persons to find one who has not the phenomena—in whom we can not bring out the phenomena by the very means he

has described, of insufficiency of the sphere of light. The greatest objection that has been made (not by me but by others) to this theory, is the interference with these cylinders, the ignoring of the ancillary muscles in the interests of the oblique muscles. I also refer to the paper to-day by Dr. Hobby, who says that in cases of asthenopia supposed to be caused by cyclophoria, the majority of the cases are caused by ametropia and not by hypermetropia. Referring to the fatigue which Dr. Savage attributes from his exercise with cylinders, to the exercise or strain put upon the oblique muscles—nobody, who has not had astigmatism corrected by cylinders put on—can look through cylinders at any time without suffering a certain amount of strain. He details the fact that when the cylinders are turned or worn for awhile, the strain is felt to be upon the obliques. This is pure assumption. I will draw attention to the fact stated, of the rarity of the insufficiency of the inferior oblique muscles. Now, it has been practiced as I said yesterday, known for twenty years that rotation of the eyes upon their posterior axis takes place in convergence, and I have satisfactorily proven that such rotation takes place in convergence at a distance of twenty to eighteen inches, and increases in proportion as the objects are brought nearer. According to the experiments made by Dr. Savage's test, or by the cylindrical prism, that all this immediately disappears as soon as the object is 45 degrees below the primary plane of vision. Meissner attributed this fact to the action of the inferior oblique muscle. Another thing that Dr. Savage nor Dr. Price ever has done—submit to the profession a series of cases followed out an adequately long time in which, after the exercise has been followed out, any relief which is claimed has been secured, whether the same careful testing obliquity of the line is present or not. I venture to say, no person can be found in whom any amount of exercise can overcome the inevitable rotation of the eyes and convergence. If any person will put the candle at twenty-five feet and put the cylinders before their eyes they will find that there is not the slightest incentive to any fusing of the light—supposing the cylinders are put on an oblique so as to cause the lines of the candle to be drawn out at an angle—place the cylinder with the axis nearly vertical, and you get the horizontal line. There is no such incentive as in a line drawn upon a piece of paper, but there is a decided strain upon the ancillary muscles, caused by the cylinder.

Another thing I draw attention to is the insistence on Dr. Savage's part that such weak cylinders as one-half or one-fourth D. or 110 degrees or 105 degrees—that such a slight change will bring a strain upon one or the other oblique muscle. As I understand, the change made in the cylinders by Dr. Savage favors one muscle or the other, in the case of very weak cylinders. Again, he attributes a very weak amount of astigmatism, such as one-half or one-fourth D. as causing a strain upon the oblique muscle. I said decidedly yesterday that the amount of disturbance of the retinal image caused by a strong cylinder of 2 D. is considerably less at a distance of thirteen inches. The 60 degrees of variation becomes 40 degrees, at 45 degrees, its greatest deflection. You can therefore imagine how much deflection on the cornea is caused by an astigmatism of one-half D.

I wish to say in making the opposition I have to this theory, I am actuated by a conscientious motive. I do not believe in the indifference shown to theories which have not been worked out with due deference and care when they are originally presented to the profession. I may say that this theory was sprung upon the profession without due regard to the writings of physiologists, nor with due consideration of the facts which I have given, and I believe it takes the attention of the future ophthalmologists from things which they should attend to, to things for which there is no foundation.

DR. ERWIN, Mansfield, Ohio—Mr. Chairman, unfortunately, I was not here early enough to hear Dr. Price's paper. And I have not studied Dr. Savage's doctrine enough to know all that there is in it, but there is one point I notice. It is that the oblique muscles are affected by the cylinder, especially if the cylinder is an oblique cylinder. The disbursement of the image on the retina by the oblique cylinder gets up a new kind of action on the part of the eye. The muscular action of the eye is so habituated that it becomes almost, if not altogether, involuntary. Now the least deviation from the habitual impression of the object upon the retina causes a complete change in the use of the oblique muscles of the eye, so as to require a voluntary action on the part of the oblique muscles. When you have upset the habitual action of these muscles, and you make it necessary for a voluntary act on the part of the muscles, you see how likely you are to get a disturbance of that muscle in a short time. It is my observation that oblique cylinders had better not be prescribed at all, if there is only a low degree of astigmatism, unless you have a patient that is willing to suffer a good while before the muscles acquire their new use, that they have to acquire before they can become comfortable.

DR. SIMONTON—Mr. Chairman, I do not wish to make any technical argument on this subject, for I do not know anything about it. I confess I have not given it sufficient consideration, but wish to say that when Dr. Stevens first brought out his ideas in regard to hypermetropia, the whole profession pooh-poohed it—it could not be so, it was impossible—the results which he claimed could not be true. It has been demonstrated that most of the positions which he took are true. Now, this theory of cyclophoria is new to us and it is yet under discussion. It is not a settled matter, and it is quite likely it will prove true to a greater or less extent. I am open to conviction.

DR. EATON—Mr. Chairman, I would say that there is a little difference here. I was one of the first to recognize Dr. Stevens' views. I was operated on myself by Dr. Stevens. The conditions are quite different.

DR. PRICE—(In support of the theory advanced in his paper on cyclophoria, the Doctor then referred to his own case as an illustration.)—Twenty-five per cent. of all the cases of whatever error that fall under our observation are from insufficiency of the superior oblique, and we test every case of insufficiency of the oblique muscles as we do insufficiency of the other eye muscles, and we invariably do that before we put anything in that eye. The Doctor has referred to my not presenting cases. Gentlemen, if there is any one thing in the world that a Society or Section or body of men does object to, it is a great array of cases. I can produce from our record books hundred of cases in which we have detected cyclophoria, and in many cases where the cyclophoria has been relieved, I could relate case after case. The second case upon which we successfully used the cylinders for the purpose of correcting this condition by exercise was a lady who told us that for twelve years, she had not been able to read, write or sew. She had been in a condition of absolute idleness on account of her eyes. We did not know anything about cyclophoria then and we tried everything in the world that we could think of. She tried constitutional treatment for two or three years by physicians here, there and everywhere. She had consulted men everywhere; oculists, ophthalmologists, opticians and everybody else. When we did find out about this thing and put her upon exercise, the patient began to improve and in a short time left Nashville and went to the City of Mexico, and she says now she reads, writes and sews.

QUESTION—Is there any direct relation between astigmatism and cyclophoria?

DR. PRICE—Yes sir; from the fact of the perpetual oppo-

sition to the horizontal, the muscles have to bear the strain. If you use an ordinary ophthalmoscope you will get your axis of 90 degrees. Your weak muscle is not put upon such a strain and your strong muscle is not put upon so much tension, and you do not get the pronounced effect until the patient recovers. I have made mention of but three cases for the simple reason that I knew it would be tiresome.

QUESTION—Why not use a prism instead of the cylinder after exercise, if there is no astigmatism in the case?

DR. PRICE.—One point about this detection of cyclophoria is—I have thought that probably I could take an ordinary prism—

DR. EATON—You don't think I question that the superior and inferior obliques rotate the eye?

DR. PRICE—Not a bit—I am satisfied that they do. The Doctor said and said decidedly yesterday in his paper that a cylinder twenty-five or fifty hundredths would produce no effect.

DR. EATON—I did not say anything of the kind. I said that a cylinder of 2 D. will produce three-fourths of a degree at the approach to the eye, but I said that I can not make the movement with a one-half D. cylinder.

DR. PRICE—My experience is this: I have cyclophoria; I have never subjected myself to systematic and constant exercise, but occasionally I take exercise for this reason, that after prolonged work I slip up with a case of neuralgia. If I exercise for five minutes with these cylinders, exercise my inferior obliques, the trouble begins to disappear and I begin to come out of the shadow of the vale and feel better. The oblique cylinder in this case is like the oblique cylinder in the case represented in his paper by the Doctor. It makes no difference whether it is one one-hundreths or 10 D. If that cylinder is incorrectly placed, it will give trouble. I have seen patients with the axis 140 in one eye and 135 in the other, and I have seen them with twenty-five one-hundredths place 15, 20, 30 or 10 degrees even from the line of horizontal, or proper correction, and that patient never gets any satisfaction until the cylinder is changed in position. Why is it that exophoria should be such an annoying factor? If one muscle is insufficient, why not another muscle insufficient? There is not a man in the room that can stand perfectly still for five minutes. Watch a body of men in a military company—every man is swaying, because there is always a slight adjustment. The same thing occurs with the eyes. The opposing muscles on some side are a little too strong. Show me a man with his head on one side and he has hypophoria. It is a strange thing to me that the Doctor seems to think that because certain investigators have discovered that in most cases there is this variation from the normal, in all eyes that they have examined, that consequently it is normal. That is a great mistake. Gentlemen, I could relate case after case, but cases are not the thing. If you can get it into your mind that these cases do occur and are there, it is all right and you can demonstrate it. A man can oppose anything in the world, because he believes he says what is right and his experience is along that line. I trust the Doctor will yet become converted.

THE CHAIRMAN—We have one very interesting subject to come up this evening, but it is getting so late and we all want to attend the dinner, so that the first order of business to-morrow morning will be Dr. Southard's paper.

The Sir Astley Cooper Triennial Prize.—The next triennial award of this prize takes place early in 1895. The value thereof is £300. All competing essays should be in the hands of the physicians and surgeons at Guy's Hospital before Jan. 1, 1895. The subject for the competition is "the anatomic distribution of the lymphatic vessels and the physical forces concerned in the movement of the lymph." This prize is open to the whole world, except certain of the attachés of the Guy's and St. Thomas' Hospitals, London.

SCHOOL CHILDREN'S EYES—A PLEA FOR THE EXAMINATION OF EVERY CHILD'S EYES, WHEN COMMENCING TO ATTEND SCHOOL.

Read in the Section on Ophthalmology, at the Forty-fifth Annual Meeting of the American Medical Association, held at San Francisco, June 5-8, 1894.

BY W. F. SOUTHARD, M.D.

SAN FRANCISCO, CAL.

Looking over the annual report of the public schools of the city of San Francisco for the year 1893, I find that there was an average daily attendance of 31,002 pupils between the ages of 5 and 17. Of this number 69 and sixty-three-hundredths per cent. were in the primary grades. This includes all children between 5 and 10 years of age. Twenty-six and six-hundredths per cent. were pupils in the grammar grades, while but 4 and thirty-one-hundredths per cent. were high school pupils. These pupils between say, the ages of 10 and 17 were divided between the grammar grade and the high school. I wish to emphasize the point that, though this does not state the total enrollment of pupils, it does very correctly give the daily attendance throughout the year. An analysis of these figures will give us some very important results. In the first place, you will observe that from the primary grades over one-half, or 50 and forty-three-hundredths per cent. fail to enter the grammar grades. These children at this time are about 10 years of age. At the close of the grammar grades, 71 and sixty-eight-hundredths per cent., or more than three-fourths, fail to enter the high school.

Finally, to show more vividly the enormous decrease of school attendance between the tenth and seventeenth years, we learn that there is a total loss of 96 per cent. as between the primary school attendance and the high school attendance. Let us see if we can discover the cause for such a tremendous variation in attendance between the three departments of our public schools. We shall find, I think, that not one only, but many circumstances, conspire to bring about these results. The average person will be very likely to say that removals, deaths, sickness and discouragement ought to be a sufficient explanation. I am sure that a more thoughtful examination into the causes will convince us, that not only the above mentioned, but other reasons exist for such a condition of affairs. To my mind this fact is a cause for greater surprise and alarm than that but 4 per cent. of our primary pupils reach the high school, insignificant as is that number. At the age when pupils enter high school a very large number are withdrawn to become wage earners; they must assist in providing for the family. A very large percentage of the parents of these pupils think that completion of the grammar grade is all that their children need to fit them for all ordinary vocations. But this can not be the case at 10 years of age, for the percentage of permanent bread winners of 10 or 12 years of age must be very small in this State.

We find on examination, that is, by questioning teachers, superintendents and those who are daily brought into contact with children, that the number dropping out because of their inability to keep up in their studies must be very large. It is possible that as we examine this particular cause for loss more carefully, we may discover the very material we are after by which our proposition may be maintained. I have held for some time in my arguments with edu-

cators, that if curves showing the mental capacity of a thousand children of the same age, could be drawn, they would show but a very slight variation one side or the other from a given mean. I believe that we shall find that the brain capacity of our children can be measured with as good results as we have obtained in other branches of anthropometry, a study which has been brought to a very high degree of accuracy. For example, Prof. Bowditch, of Harvard University, Prof. Gihon, of Annapolis, and Prof. Hitchcock, of Amherst, have together measured some 40,000 persons between the ages of 5 and 25; the design being to show the rate of growth of the body, for the different ages. From these measurements a certain mean standard of physical development, height, weight, chest measurement, length of body sitting and standing, etc., to which the great majority nearly attain has been found. The deviation above or below this mean is found to be about the same.

That there is a tacitly recognized uniformity in brain capacity, powers of comprehension and general intelligence among children of the same age is proved by the fact that school books have been prepared, hours of study, and the studies themselves arranged to meet this. We may question the wisdom of making text-books on such a rigid plan; we can not deny the facts. It follows therefore, very clearly, it seems to me, that very nearly equal results should be attained by the great majority of pupils. If this is not true then there can be no law governing our intellectual powers. If, then, we find in the same grades at school a very wide departure from the standard, we must conclude either that the general standard is too high or a very large percentage of our children have some disability. Why should so many children become discouraged? Their work is not particularly difficult, their hours are comparatively short, and in the primary grades they are not expected to study at home. Ill health is an important factor; thousands of children are already invalids before going to school; inherited weak constitutions; impoverishment of bodies from deficient or unwholesome food, bad hygienic surroundings at home, all unite to handicap such children in school work. The stooping forms, eyes bent close to the desk before them; the shuffling walk; the notched teeth; thin faces and other physical defects are to be seen every day and in every primary school. If we examine this class of children we find that they have in nearly every case marked deficiency in visual acuteness. We cease to wonder that such pupils can not compete in the struggle for an education.

There is again, a large percentage who fall out of the ranks from among the apparently healthiest and brightest children. For a term or two they may have no trouble, but later on they drop behind, when they in turn become discouraged. We are able to positively state that they have no impoverished bodies, that they have always been well and have never complained before going to school. As they fall behind their classmates they are called mischievous, stupid and other epithets of like character are bestowed upon them. Many of these children come home every afternoon complaining of headache, or if they have no headache they complain of feeling tired, they get listless and hang about the house. They are being constantly corrected for not paying attention. In fact one of the most frequent complaints from teachers is, that such children never look upon the work before them more than a moment or two at a time. They are being constantly diverted to whatever is going on about them. It is needless to ask what is the outcome of this condition; the teachers get impatient and become constant fault finders, the child gets discouraged, and the parents in many cases become dissatisfied and remove their children from school. It is among just such material as this that we find the evidences which confirm us in our theory that there can be but one way to treat this whole subject. We find that the very largest proportion of these children have errors of refraction or some disturbance of the visual organ. We find also on looking into the matter more closely that the school environment is not of the best, school rooms are imperfectly lighted in most every case, the proportion between windows and floor space is less than the standard. Many rooms are so situated as regards light that they can not by any means get good direct light. But too often the best light in the school rooms is a reflected light from some adjoining high building. Such a light is most injurious to the eyes and to the nervous system. Then there is the question of heat and ventilation, serious questions too. The proper seating of the pupils at their desks, the character of the seats themselves are in too many cases the cause of permanent injury to the growing child. Poorly printed books, and poor paper have much to do with strain upon the eyes. Though much has been attempted to remedy some of the most evident of these defects, we can not but feel that the rights of the child have not been considered when we let contracts for building school houses. Politics govern our school system, in most places, to too great an extent. We spend money enough to get the very best results; it is, however, becoming evident that enormous sums are most unwisely spent. Each of these points just mentioned needs more discussion than can be given at this time. Given these imperfect surroundings together with some defect of vision, and we have a combination which must sooner or later be detrimental to the child, physically or mentally. Is it any wonder that he has no concentration?

In pursuing this subject of our public schools a little further, we have to note that in the primary grades there was enrolled at the commencement of the year a number equal to thirty-two and thirty-five hundredths in excess of the number in regular attendance. They mostly dropped out during the first two or three weeks of school. Such a number of units thrown upon the community unable to read or write must become in time a serious burden upon it. I am most firmly convinced from personal observation that poor eyes must be a leading factor in causing this great loss. A law compelling a rigid examination of the eyes of every child when he begins to go to school would seem to be demanded. Let every child come to school bearing a certificate stating the exact condition of its eyes. By such means the teacher will be put in possession of facts which will be of inestimable use to him and to his pupils. A plan so simple ought to commend itself to every physician, to every educator and to every parent.

Having shown the intimate relationship existing between imperfect eyes and lack of power to apprehend, a long step forward has been taken. Statistics have been made of many thousands of school children in Europe and America, by a large number

of competent observers during the past twenty years. An examination of these results most clearly shows that there is a most intimate connection between education and defective vision. It has been proved that myopia (that form of defect to which all eyes tend) exists in but 1 per cent. of the primary scholars in country districts. This is due to obvious causes; country children go to school a less number of hours daily, or if they attend, less is expected of them. They also attend a less number of weeks during the year and they read or study but little at home. An examination of the city schools shows at a glance a different condition of affairs. Myopia is found in these schools in far greater proportion. As we ascend from grade to grade, from primary school to grammar school, from grammar to high school, from high school to colleges and universities, up to the highest institutions of learning, myopia is found ever on the increase, until in the very highest schools in Germany over 90 per cent. have been found myopic. In other words it is now an accepted fact that myopia is a product of civilization, one of the results of our modern methods of education. It is not our purpose to discuss these methods on this paper, simply to draw your attention to a fact now generally accepted.

Having shown that there is this relationship between myopia and education it may be said, But this does not account for the first proposition, viz.: That such a vast percentage of pupils drop out of the ranks at the early age of 10 years. At 10 years of age myopia has been found even at its maximum to be only 10 per cent. Myopia, then, can not alone be a sufficient cause for so great a loss at so early an age. This is very true, but myopia is not the only error of refraction causing disturbances. It has been very satisfactorily shown that all infants are born hyperopic. We may also assume that a very large percentage are born astigmatic; of these probably 75 per cent. have hyperopic astigmatism. From 5 to 15 years the child's body is developing most rapidly. A greater amount of nutriment is now being taken in proportion to its weight than by adults. Tissue changes are taking place in a most rapid manner. Physiologists claim that during these years a large part of the twenty-four hours should be given to body building by means of sleep, food and exercise. The visceral organs, for example, may be altered by too great and too continuous compression. It needs no philosopher to tell us that we must expect more or less alteration in the shape of the eye-ball from too great and too continuous use of the eye at the near point. If we admit that this may take place in the so-called normal or emmetropic eye, how much the more likely are changes liable to follow over use when the eye is in its undeveloped stage? We know that the ciliary muscle of the hyperopic or undeveloped eye, from its very nature must be in a constant state of activity during all the waking hours. At the far point as well as the near point the effort is being constantly made to force the rays to a focus upon the retina. This effort means strain, and the strain means disturbance of the nervous system. The effort to maintain visual acuteness by the expenditure of force upon the ciliary muscle is not the whole story. According to the degree of hyperopia there is a change in the angle, "alpha," which means that the attempt to maintain binocular vision must be attended with expenditure of force, and this often leads to strabismus. This proposition brings us to the point I am to make, viz.: That children's eyes are from their very construction just the sort of eyes which will cause the greatest discomfort from over exertion. The two factors, the attempt to produce visual acuteness by forcing the ciliary muscle to powerful contractions, and the effort to maintain binocular vision by forcing the extra ocular muscles, is liable to produce varied and peculiar symptoms upon the nervous system. I assert, then, that those children having hyperopia and hyperopic astigmatism are the real sufferers. Their constantly nagged nervous apparatus tends to become wearied to the extent that they can not give close attention to the work before them. They must look up often to rest their wearied muscles. Therefore, to expect continuous application and good attention is most unreasonable. That such children may lose interest in their school work on account of the difficulties surrounding them we can readily understand. We could, did space permit, show that these imperfections may have a very marked effect in the development of the child's character.

In my examination of the eyes of the students of the University of California, for the past five years, I found that the percentage of refractive errors was 68 per cent. Of this number only 6 per cent were myopic. In a detailed analysis of 1,300 errors of refraction I have shown that 75 per cent. were hyperopic in some degree. I found in looking over the list of symptoms attending these cases that pain of eyes, headache, muscular spasms and nervous symptoms generally were confined to this class of cases. The myope but rarely complains of anything more than inability to see at a distance.

It is not to be denied that myopia is greatly to be dreaded; since it can not be stayed in its progress in many cases, even though corrected with glasses. We are willing to believe that it is the end toward which a vast proportion of eyes tend when overworked. We claim, however, that our sympathies are rather to be directed to the youthful hyperope. Could we but examine every case during the first few years, we would not be sending to our universities young men and women with eyes just ready to break down. The remedy is examination and constant watchfulness. We must bear in mind that the tremendous waste unnecessarily taking place through the effort to work under the disadvantages of a refractive error is not easily measured. Individual suffering, and loss of power to work, may cause great material loss. From this cause the community has to be taxed to support asylums; from this cause many eyes tend toward disease and ultimate blindness. These are among the possible results of neglect on our part to do our whole duty. We may build asylums for the blind, we may do everything possible to remedy the defects already existing, yet unless we go down to the very foundation of the trouble and alter existing causes for disturbance we shall in time have as great a percentage of spectacled beings as is now seen in Germany. Remember that this is an age of conservation of energies, not waste.

DISCUSSION.

DR. MILLER, Los Angeles—This subject is of great importance. The too familiar statistics of Germany are highly instructive. While examination of the eyes of young school children is highly important we must inquire still farther

as to the causes of these troubles. I am not satisfied in my own mind just what those causes are. Our people seem to be becoming more and more neurotic. Children living in cities should have more outdoor exercise. The result of our higher state of civilization is to develop a decidedly neurotic state in our entire population. I think we must look well to this and develop a state of general health if possible —greater freedom and more outdoor exercises. I think also that particularly in this State the great variety of work ordinarily given to children at schools is prejudicial. It seems to me there are educators undertaking to cover too much ground, and there are too many studies in our schools requiring numerous and rapid transitions of the mind from one subject to another, and maintaining constantly a high degree of nerve tension. It takes some little time for the pupil to get his mind onto a given subject, and about the time he begins to get well under way he must suspend that and take up something else, and so on—we have a constant rapid change from one subject to another, which brings about the nervous tension. This I believe to be operative, as well as several other causes. Much more attention must be given to lighting, warming, and ventilating your school rooms. It might be well when the child enters school to have him present not only a certificate from his physician that he has no ocular impediment, but that he has no nervous or other impediment to his doing the work ordinarily done by children of a corresponding age.

DR. L. R. RYAN, Galesburg, Ill.—I think the question is not so much to get at the cause of myopia because that is well known among the fraternity. The main thing is to get the people to appreciate the disease and take the means to prevent it, and we have to get the people who have an influence with the children interested, especially the teachers. I can recall a great many cases where children had been forced out of school absolutely on account of defective vision; the teachers have classed them as dullards simply because they could not read or study. And it is only a few days ago that a little girl came to me almost crying because the teacher said she was lazy, and she had a very high degree of hypermetropic astigmatism. It was absolutely impossible for the little girl to study; her sister who was a twin was very bright indeed and the two were compared and she was almost driven out of school. I think we ought to enforce upon the teachers the idea of paying attention to hygienic conditions as far as the eye is concerned—to have the light properly arranged, to have the desks arranged so that the children can study in school without getting into a cramped position; to instruct them in hygienic means and to have the idea carried to the parents at home so that everything can be arranged and they can study properly. You will find in a great many cases, especially among children of the lower classes, that the children are packed off in a dark corner and compelled to study there, while the old people are given all the advantages as far as light is concerned. I think if you will visit the great majority of our public schools and examine the hygienic arrangement as to light and desk facility you will find that they are sadly at fault. I can recall cases where the primary children have been put away down in the basement where the light was very poor indeed and where it was absolutely impossible to see an ordinary pin. Then, too, I have studied the question of the arrangement of the desks. You take the little children in the primary department and you will find that they have their chins right on the edge of the desk and the book is set at such an angle that it is absolutely impossible for them to read without getting their noses onto the books, and in writing or getting their lessons their chins will be down at this angle. (Describing the angle). Now any one who knows the question at all knows that the eyes are used under such circumstances at a very great strain, and the development of myopia is very easily produced, and I think as a Society we ought to try to get the people and especially the teachers to appreciate those hygienic conditions.

DR. F. P. EATON, Portland, Oregon—Mr. Chairman: What the doctor preceding me said in his closing remarks I think has hit the main point of this matter. We are quite well aware of the injury done to the school children, but the problem is how to work upon the public. Ordinarily the public understands that the myopic eye is the product of school work. It is not, however, clear at all to the public that the hypermetropic eye, and the astigmatic eye are both of them equally productive of misery and discomfort and injustice on the part of adults to children. I hesitate myself to make a motion as fas as this Section is concerned in any way that would call attention of the educational portion of our communities to the importance of having the eyes of children examined. It has occurred to me and I suggested it to Dr. Southard that some such committee be appointed by this ASSOCIATION or by this Section to endeavor to have the various State Medical Societies formulate certain resolutions so that the various Legislatures, or at least the municipal authorities, might act upon the school teachers in such a way for the benefit of the children as we have heard this morning.

DR. H. M. STARKEY, of Chicago—Mr. Chairman: I am very glad indeed that I am one of the few here to hear this paper of Dr. Southard's. It is a very important subject. I don't know that I can add anything to it that hasn't been entered into in the question of the general examination of the eyes of school children. I think the point of the education of teachers is a very important one. We see a great difference in teachers, and their treatment of pupils; for instance I not infrequently have children sent to me and say the teacher told them they could not come to school again until they had their eyes examined. The teacher has seen that there is something wrong with their eyes, and having said two or three times that they should go and see a doctor and they not having done it, the teacher after a time has said: "You can not come back until you have your eyes examined and see what is the trouble." It certainly is a most important point as we all know from experience. We see the pupils ordinarily—that is if we see them at all—when they have been overtaxing the eyes which are hypermetropic or having hypermetropic astigmatism, go on for years perhaps until a permanent injury has occurred. And if by precept and example or even by legislation at a later time, when we have inculcated into the public mind the necessity for such legislation, if anything can be done so that every school child in his study whether in the public school or otherwise shall have the eyes thoroughly tested it will be a great advance.

DR. H. B. YOUNG, Burlington, Iowa—Mr. Chairman: Following the line of thought suggested by Dr. Eaton and the last speaker, I desire to call the attention of the Section to the fact that in many of the States the school teachers are very strongly organized; in fact it is a compulsory organization known as the State Normal, and by addressing our communications to the State Teachers' Association we perhaps could get an entering wedge which would be very valuable in this connection. As far as I individually am concerned, I have for some years past at the invitation of our local Normal Teachers' Association, had some talk on the subject; and I think every member of this Section would be very willing to volunteer such instructive talks to the Association in his own respective district. I know I have done so upon the express invitation of the Superintendent of the Normal department.

DR. SOUTHARD—I would like to hear from the President; I think he has had some experiences in that line.

THE CHAIRMAN—It only occurs to me to say that I have had some experience in the examination of school children's eyes and I think that this subject would perhaps be a very profitable one for a special discussion such as we had this year for the objective tests, and to make that suggestion to the Nominating Committee, which I think would be the proper one to bring forward the subject at the next annual meeting. It is certainly an extremely important subject, and one which can be elucidated by general discussion—at least by general discussion we can arrive, I think, at practical means of working out the result that we want to accomplish.

DR. SOUTHARD—I will not occupy much of the time of the Section. I am not egotistical enough to believe that I have written anything at all in this paper that is new to any of the gentlemen present. I did not expect to bring in any array of scientific data, but thought it would be well to have the subject started. There is no member of the Section, but who is fully aware and well posted on all statistics that have been made, and during the past twenty years the enormous amount of the statistical matter which has been made is sufficient in itself to prove the point that there is abundance of errors. I want to bring it in shape to get an expression of opinion as to some method of procedure. I myself believe that that idea of engaging the attention of the government of municipalities is a very good method; but my purpose has been to show that the great failure is in the schools in the early age, that is the primary schools. I do not expect that we can correct it after 20 years of age; we don't expect to make changes then. We then give them glasses and let them go on as best they can. It is at the primary schools that we must commence if we are to make the change. Now the fact is as I said, I do not present any array of statistics but I simply say this: As between the primary schools in this city which have an average attendance of 31,000, and the grammar grade which is the next grade above that, and begins at 10 years of age—I say that with an average of 31,000, say up to 10 years of age, that that attendance at the next grade above, within a comparatively few weeks drops over 50 per cent. That can not be all due to the causes which I have enumerated—a desire to work, and so forth—because we don't have much of that in this State with children at that age. I have had the privilege of speaking to the State Teachers Association in this State; and several times I have talked upon the subject with different County Teachers Associations; I have had the privilege of bringing this question in a little different but analogous form to the Stanford schools, and I have endeavored to show them that the immediate cause for a great deal of our disturbance, this inability to concentrate the mind, is that children get disturbed because they can not concentrate their minds where they ought to be able to use their eyes, for instance ten or fifteen minutes at a time, and they are the ones who deserve our sympathies whatever it may lead to. I speak of myopia in my paper, but as we know it does not exist in our country to a very large extent. A myopic child can see pretty well. It is hypermetropic and astigmatic cases and, as I have stated, the results that I have obtained are entirely under the average. When I say that hypermetropic and astigmatic cases are 75 per cent. of all, I am within the bounds of my own personal examination of those cases. And I believe this, that if we were to make a change by which we could analyze a larger percentage of the pupils through the schools up to the high school though not beyond, but to the high school point, where they are then fitted to go to work, that this is a very important point. Now I acknowledge that there are a great many other causes as Dr. Miller says; for instance, the hereditary tendency to disease is very apparent, especially among certain classes. If our Section could give some inducement to this question of the necessity for a compulsory law, there is no doubt in my mind but what the law can easily be carried out. In this State we have a compulsory law for vaccination. It is a law that does not need the approval of every member of the community, but it meets the approval of such a large number that we carry it out very effectually, and it is a law which has been passed upon by the Supreme Court as a constitutional law. Therefore it is not a law that might be put under the head of class legislation. A law which would perhaps be of greater value than even that, if we can allow such a thing, would not only meet the support of physicians and teachers and educators, but of those who are interested and who have children themselves. The methods of getting at it are to be developed later on. I am sure that it could be done, but the teachers and educators and politicians and all this class of people must have this thing brought to them by inducement of those who have had experience, such as the men in this Section have had.

In answer to a question as to what kind of certificate would be required of children, the Doctor replied as follows:

The provision should be that every child when it first comes to the primary school shall bring a certificate to the teacher; that when that child enrolls its name it shall have a certificate saying that its eyes are in a condition which will permit it to take up the ordinary course of studies that children of the same age usually do. Now it does not mean that there are to be paid oculists for every school. But it means that their eyes are normally constituted to do that, and if they are not normally constituted that they are to have glasses fitted to them to pursue the studies which children of the same age take up. You see how it is. I have found in my experience among teachers in the schools here, those so ignorant on the subject, that they have pointed out to me in the schools that such and such children were probably deficient in mental power, and I have seen those children and can call to mind several of them in fact. But there is one case that came under my observation—a child who was sent to the Home for Feeble-Minded Children. That child is wearing glasses and is now one of the brightest pupils of his age. There was nothing at all the matter with the child but inability to concentrate himself upon his work; he could not see; his whole horizon was bounded by just the little about him and his contact with the world was such that he knew very little of it. He was sent to the Home for Feeble-minded Children and the intelligent man at the head of it saw at once there was eye trouble, and that was corrected at once.

(Question was asked as to re-examination.)

I have no doubt but that every five years they should be re-examined. That would be included in the law. It would be easy enough to have the thing worked up in time. The object is now to get at the point that there is a necessity and that we are in favor of this law.

SHOULD CASES OF TUBERCULAR CONSUMPTION BE REPORTED TO LOCAL BOARDS OF HEALTH?

Read at the Meeting of the Northern Tri-State Medical Association, held at Angola, Ind., July 17, 1894.

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TECUMSEH, MICH.

The question with the above heading should be stated somewhat after the following manner: Should a case of pulmonary tuberculosis be reported to the local board of health as a case of contagious disease?

It has been estimated by very competent men, that tubercular consumption carries off about one-seventh of the human race. When we take into con-

sideration the great number of diseases that "flesh is heir to," this must be considered a very high death rate from a single disease.

The efforts put forth by the various governments of the civilized world to prevent the spread of Asiatic cholera are very great indeed, yet the death rate from cholera with all its ravages is never equal to the death rate of "the great white plague," pulmonary tuberculosis. The disease has invaded almost every part of the habitable world; it enters the palace of the prince, as well as the hut of the peasant; it casts its blighting scourge over the fairest lands in both temperate and torrid zones: It is doubtless as fatal to-day as when Abraham fed his flocks on the plains in Judea. Notwithstanding these facts, the disease never creates public alarm nor has it at the present time attracted the attention of a single national government, either in Europe or America, so much so as to enact laws in order to control the disease, although something has been done notably by the governments of the United States and Germany, in order to prevent the spread of tuberculosis among the lower order of animals. In the past there has been only one locality, which I am able to cite to you, where any effort has been made to control the spread of tuberculosis, viz: the city of Naples. Long before bacteriologists had demonstrated that pulmonary tuberculosis is a contagious disease, the government of Naples had passed restrictive laws in order to control the spread of consumption among its inhabitants. "Smell Naples and die," is a proverbial remark long in use, uttered in every European tongue, in order to point out the unsanitary condition of that city, yet, restrictive laws relative to pulmonary tuberculosis reduced the death rate from this disease, which had heretofore been high, to a very low mortality.

Without doubt, heredity is an important factor in the production of tuberculosis, that it is only one, but not the least important factor in producing consumption is doubtless true. Since the discovery of the tubercular bacilli by Koch, it has become an established fact that pulmonary tuberculosis is a contagious disease; that the tubercular bacilli enter the lungs through the larynx, thence into the bronchii, where we frequently find tubercular deposits upon post-mortem examination.

Tubercular consumption is spread by means of the sputa that contain the bacilli. When dried the virus is carried in all directions by the atmosphere. Osler states that between three and four billions of tubercular bacilli have been thrown off by a single patient in twenty-four hours. A large proportion of patients disseminate the disease throughout the suppurative stage by means of the sputum, which is usually sown broadcast wherever the infected subject may choose to travel, either by sea or by land. Tubercular patients frequent churches, schools, opera houses, dance halls, and court rooms, wherever business or pleasure calls them, disseminating tubercular virus in all directions. These micreörganisms are certain to find a proper soil where they take root and grow; but unlike the virus of scarlet fever, smallpox, cholera, and many other contagious diseases, the incubative stage lasts months, yes, and even years: hence it is that the public, and even the professional mind is seldom aroused by this fatal disease which has proved in the past, as well as in the present, the greatest enemy of the human race.

Probably the most instructive as well as the most exhaustive experiments relative to the contagiousness of tuberculosis have been made by Cornet of the Berlin Hygienic Institute. His material was gathered from various sources; from three asylums, two prisons, and from twenty-one wards in seven hospitals, from the surroundings of sixty-two private patients suffering from tuberculosis and twenty-nine different localities which were the resort of transient patients. From Cornet's experiments, negative results were found in those places occupied by transient patients, while virulent tubercular bacilli were found in the dust from the walls of fifteen out of twenty-one wards occupied by tuberculous patients. Dr. Cornet cites the case of a tuberculous female patient. Six weeks after her death he examined the dust from the neighborhood of the bed and found it highly infective. While it has been proved beyond the possibility of a doubt that the dried sputum from tuberculous patients is highly infective, it has also been found that the expired air of these patients is not infective.

The death rate from pulmonary tuberculosis in prisons, almshouses, cloisters, and among nurses in tuberculous wards in hospitals is unusually large.

During the past twenty-five years Dr. Flick, of Philadelphia, has been studying the distribution of tuberculosis in a single ward in that city. He found nearly one-third of the houses infected with pulmonary tuberculosis, and that 33 per cent. had more than one case in it; he also found that more than one-half the deaths from consumption in the year 1888 occurred in these houses. Osler states that out of 427 cases of pulmonary consumption at the Johns Hopkins Hospital, in 25 either the husband or wife had been afflicted with it or had died from the disease. Cases are reported where the husband has lost four wives, others three and some two. I think there are very few physicians whose experience has run through a score of years, but what can relate cases where two or more in one family have died of pulmonary tuberculosis.

It is frequently mentioned by those opposed to the idea of tubercular infection, that monkeys in the African jungles frequently die of pulmonary tuberculosis. It is a singular fact that the venereal passion is strong among tuberculous patients; doubtless the same passion exists in the tuberculous monkeys inhabiting the jungles of Central Africa. If true, they would live in sufficiently close proximity to infect one another with tuberculosis.

The evidence is strong that tubercular infection is principally confined within the walls of buildings and that outside of enclosures the chances of infection, if any are almost *nil*. Among bacteriologists at least, if not among medical men, there is a consensus of opinion that pulmonary tuberculosis is a contagious disease, and that patients and nurses should be instructed in every means necessary to prevent infection.

That pulmonary tuberculosis can and should be restricted is generally believed, and in order to accomplish this object it becomes necessary to report every case of pulmonary tuberculosis which may occur in a community, to the local board of health. It is not necessary to placard the houses of tuberculous patients, or to restrict individual liberty, and as long as the patient is able he should be permitted to follow his usual avocation, providing he implicitly follows out the instructions given him by the local health officer.

The State Board of Health of Michigan has made it obligatory on the part of physicians and householders to report to the local board of health all cases of pulmonary tuberculosis, so that the State Board may give information to patients and attendants through the local health officer relative to the prevention of the disease.

"FEMALE WEAKNESS."

BY C. E. RUTH, M.D.

PROFESSOR OF DESCRIPTIVE AND SURGICAL ANATOMY IN THE KEOKUK MEDICAL COLLEGE, AND CLINICAL SURGERY IN ST. JOSEPH'S HOSPITAL,
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For relief from the above feminine terror we find three-fourths of the married and a large proportion of the single women consulting the family oracle. Frequently he looks at the tongue, feels the pulse and orders some internal medication with the promise of prompt relief. Not benefited she returns or seeks one who has the reputation of being a good woman doctor, and after the patient's diagnosis has been confirmed she is started at once on the road to certain cure (?) the means being, astringent injections, orange blossom, vaginal tablets, etc., which are sure to rid her of the unnatural whitish or yellowish discharge which she is told comes from the womb. Months and years go by, menstrual pain and leucorrhea now better, then worse, till it is finally discovered that she has a fearful ulceration of the womb that is the cause of all her trouble. Then the robbing begins in earnest; the vaginal speculum is introduced at once, twice or three times per week and the iodin, hamamelis, glycerin, wool, and cotton series are fairly ushered in with their deception and allurements. Another decade has passed; she is physically no better, financially much worse, but the iodin wiper is tolerably well fixed. All that he has ever seen pathologically of that patient was the os uteri, and its pathologic condition was due to remote causes of which her attendant had never dreamed. But the symptoms were being faithfully treated. These patients are nearly always examined in the recumbent posture, which is the most comfortable to the patient usually but often gives the physician a very incorrect idea of the usual positions occupied by the woman's pelvic organs when about her work, or in the position in which she has the greatest suffering. The speculum is nearly always used which obscures the condition of the perineum, rectal and vaginal walls, with the tendencies of the latter to prolapsus, and frequently also hides the urethra, besides making the examination of the outlines of the fundus uteri, ovaries and tubes an impossibility.

If the iodin wiper is a fraud, obtaining money under false pretenses, what shall we say of the man who undertakes to cure all of the ills to which human female flesh is heir, by amputation of the cervix, or the fellow who pretends to do perineorrhaphy and after a little scratching makes a skin perineum which only puts the defects out of sight. They both go a step beyond the former villain and add mutilation and possibly murder to robbery. In these days of brilliant surgical triumphs the doctor is hard to find who has not had his head turned just a little, and is only waiting for a victim to enable him to step at once into the field of surgical glory, especially if he can record a successful laparotomy; rather, I should say a case that did not die. The cases that are not buried in a short time after their abdominal contents are aired, can not all be said to be well. Often they are worse than before. We hear these men explaining all mystery in female genito-urinary pathology by their wonderful knowledge of the ovaries and Fallopian tubes. Most of these men who are so anxious to rip open some belly have never seen or by touch recognized an ovary or tube in the human subject, in either a normal or pathologic state. It is seldom that they can outline the subjects of their mental aberration by the most painstaking examination. They will go into the abdomen and remove appendages for pathologic conditions that exist only in the mind of the medical attendant. They jump at the conclusion that what their superficial examination and reasoning fails to reveal must be due to grave tubal and ovarian disease. The spectacle they present when lost in the abdomen and are stirring its contents for an idea is sickening, to say the least.

Is it any wonder that the laparotomy death rate is so high in some of our communities that it is almost impossible to have the most necessary operation done? It is interesting to examine the specimens in some of our laparotomists' office jars, and listen to the explanations of their pathology. Longitudinal bands of muscular fibers are mentioned as bands of dangerous adhesions that necessitated the operation. If the patient survives the criminal effort which unsexed her, the bands of adhesion will probably be ample for easy demonstration. How do some of these men become possessed of the knowledge and daring that makes them such dangerous elements in society? It seems to be born with a few, developed in some by remarkable reports of our shining lights, but usually they are hatched in a few days in Chicago, New York, or St. Louis, etc. They boast of their great opportunities, when in reality they have scarcely enough anatomic knowledge to make safe general practitioners. The masters at whose shrine they worshiped for a few short days, have toiled alone patiently for years to master the fundamental principles on which their success has been based, and those who would succeed in the same line and do not wish to be mere traffickers in human life and happiness must go and do likewise.

Much brilliant operative surgery in which is left out of sight the tiresome, difficult, and uncertain diagnostic hill which was climbed in each case, is in part to blame for the errors mentioned. These abuses and criminalities must continue till the mass of the profession are taught that ocular inspection and digital examination of the perineum, anterior and posterior vaginal walls, and urethra will enable them, without the vaginal speculum, to recognize the lesions which cause most of the trouble for which they now treat the os uteri and are anxious to remove the uterine appendages. We certainly have no use for the speculum to enable us to determine the condition of the tubes and ovaries. Bi-manual examination with one or two fingers in the vagina or rectum, if need be under anesthesia, will enable the educated touch and brain to recognize the nature of most female genital pathology that can be diagnosed without the use of the knife. It leaves very little from a diagnostic standpoint for the sound and speculum to do. It would be better if there was one vaginal speculum where there are now one hundred. With a vaginal

speculum introduced under cover, and the examination made complete with it in position, the best gynecologist will fail to correctly diagnose three-fourths of the abnormalities needing attention. The diagnosis first, and inspection of the os afterwards. It is to be hoped that the younger members of the profession will not become factors in engrafting on the profession such abominable terms as "female weakness," which had its origin in an attempt to cover up ignorance. The time for these things to be winked at has gone by, and the man with imperfect preparation for great responsibility in engrafting on the profession such abominable terms as "female weakness," which had its origin in an attempt to cover up ignorance. The time for these things to be winked at has gone by, and the man with imperfect preparation for great responsibility in gynecologic practice should receive encouragement only in the line of preparation for good work, rather than professional sanction for mutilation and murder of human beings. The man who takes money for medical treatment that he knows will be useless is no less a confidence man than the one that the law of our land would seize.

I call to mind a goodly number of cases of irritable bladder, cystitis, or nephritis so-called, permanently relieved by removal of an urethral carbuncle, repair of lacerated perineum, removal of hemorrhoids, repair of lacerated cervix, or amputation of some one or all as the case seemed to require.

Formerly I did these operations singly, or but two at a time, but for past three or more years have been doing them all at one sitting, if need be, and the patient's condition justified it. The causative factors must all be removed in any case if we expect satisfactory results. Amputation of the cervix, curettement, etc., will not cure a case of subinvolution due to causes that still continue active. The most that it could be expected to do would be to bring temporary relief, and thus gynecologic surgery is brought into disrepute. If we carefully reach and eliminate all the causative factors in each case, whether it be by surgery or medicines, we will be successful. If not, our results will rate us in the community unpleasantly close in importance to the average charlatan. Flexions have caused me more trouble than all other cases. Gradual dilatation with the Tait dilator has given me more satisfaction and my patients more relief than all other plans that I have tried. Though my patients are satisfied with it, I am not. They must, like the male urethral stricture case, have another *séance* once in one, two or more months. I have not done the Alexander operation in retroflexed cases on account of theoretical objections, but am inclined to think more favorably of it than formerly. From the operations that I have seen done extraperitoneally on the round ligaments, I am sure that the man who undertakes this operation should have the most accurate anatomic knowledge possible. No one should do an ablation of the appendages who can not palpate the normal ovaries and detect marked enlargement of the tubes. Ventral fixation bids fair to become quite popular in the near future, as it can now be done without an incision into the abdominal cavity.

From experience and observation, I am satisfied that intelligent surgery will permanently relieve or cure three-fourths of our gynecologic cases. I believe that obstetricians, midwives and the general ignorance of the community are responsible for one-half of the misery and ill health of our women.

All women should be examined in two weeks after delivery, and all lacerations of the cervix should be repaired before the woman is allowed to be on her feet, especially if the tears be laterally placed. All lacerations will be repaired by nature if located anteriorly or posteriorly, and I am satisfied that if the woman did not assume the erect posture for four weeks, those that are placed laterally would also unite. The difficulty is in the woman's assuming the erect posture, and as the utero-vesical and rectal ligaments, so-called, furnish the uterus with its principal support, as soon as the woman is on her feet the anterior and posterior lips are forcibly separated and union is prevented, and finally we see the condition remaining one of permanent eversion. With care in our obstetric and gynecologic practice the life-long invalidism and justly dreaded maternity may soon become things of the past. Then the term "female weakness," and the occupation of the iodin gynecologist will be gone forever.

SOME UNCOMMON OR SINGULAR CASES.

Read before the Pennsylvania State Medical Society, May, 1894.

BY JOHN M. BATTEN, M.D.

PITTSBURG, PA.

Dysmenorrhea, Catalepsy, Hysteria.—In 1867 a female, single, age 18 years, of nervous temperament, came under my observation and treatment for a period of three years. There were dysmenorrhea with scanty and irregular discharge, tenderness over spine, hyperesthesia over surface of body, and great tenderness over the region of her genital organs. There developed during the early part of this period, many strange and unusual symptoms and she exhibited many remarkable freaks. One day she would have a jumping toothache, the next day she would be hysterically insane, almost uncontrollable, the following day she would be in a profound catalepsy, the day after she would be a songster and the following day she might be rational. Another day she would suffer colicky pains in the abdomen, followed by all sorts of contortions of the body. These conditions would repeat themselves, period after period, in various forms. In the evening of her catalepsy day while lying in bed quietly, she would suddenly spring from the bed, surrounded by the bed-clothing, and alight head foremost on the floor. On another evening following her song day, she would stand before a looking glass in the dim light from a smoldering fire in a grate and arrange her toilet, sing a song, or read a chapter out of the Bible. At other times she would run around on the furniture of her room, or dance on the "piano." One evening she endeavored to drive me from the room with a poker. Sometimes, in the evening, when sitting in a chair after the well day she would become paralyzed and have to be carried to bed. These varied conditions continued without interruption for about two years, when she commenced to convalesce. The last symptom or condition which manifested itself was invariably lighted up when a young man visited her. On the occasion of his visit she would become paralyzed or powerless to remove herself from the chair on which she was sitting, and would so remain until after the young man had left, after which she would be carried to bed. During the night she would recover the use of her limbs. This female afterwards married the then young man and now is the mother of three intelligent, healthy children, and is enjoying reasonably good health herself. I have no doubt if a similar case now, should fall into the hands of a laparotomist there would be an operation performed.

Dysmenorrhea.—In 1888 Mrs. J., age 21, used ice cold water as an injection immediately after having had intercourse with her husband and a short time before her expected period. In a short time thereafter a group of very painful and distressing symptoms presented themselves which were difficult to control. Among these were dysmenorrhea, tenderness on pressure over the abdomen, colicky pains in abdomen, borborygmus, functional derangement of the heart, insomnia, irritable temper, and loss of appetite. After a time, under my observation and treatment, she became dissatisfied and wanted to be relieved quickly; she consulted a laparotomist who advised laparotomy with a view to removing the left ovary. After considering the matter for some time she returned to me for further treatment. She is now enjoying good health and has had one miscarriage.

Stenosis of Cervix, Supposed Phthisis.—In 1869 M. C., a female, single, age 21, had been treated by a celebrated physician for two years for what he diagnosed as phthisis pulmonalis, and had made a very unfavorable prognosis. At this time I was called in to treat her. She presented the following symptoms: Emaciation, cough, expectoration, amenorrhea, tenderness over abdomen and over spine, anorexia, constipation, periodically colicky pains in the abdomen and inability to walk. This condition had continued with varied symptoms for a period of two years. I made a thorough and careful examination and, after weighing and examining all the conditions presented, I considered that this group of symptoms might have been caused by a stenosed cervix. Upon this conclusion I acted; dilated the cervix completely with a sponge tent and thereafter my patient soon recovered; she is now the mother of two children and weighs 160 pounds.

Prolapse of Uterus in Parturition.—Early one morning in the fall of 1872, I was called to see a case, a German woman in labor with her fifth child; she was attended by a midwife who undoubtedly to hasten labor had been giving the woman ergot. I found the head of the child outside of the mother with a portion of the womb covering head of child. The os was only partially dilated, not enough to allow the head to pass through. The part of the womb covering head of child outside the mother was thin and dry. The mother was still having light parturition pains. I quieted the mother with sulphate of morphia and anointed the parts of the uterus outside of the mother with lard. In about an hour the child was born. The uterus assumed its normal position and the woman recovered.

Fracture of Olecranon.—In 1882 J. S., a boy aged 15 years came under my care at the Pittsburg Infirmary with ankylosed right elbow joint, from an injury received while working on a farm. The fore-arm was in a straight line with the arm. I put him under the influence of chloroform and in breaking up the adhesions of the ankylosed joint I fractured the olecranon. I put the arm in a rectangular splint and kept it there for three weeks. At the end of this period on becoming alarmed because some cases of smallpox had been received into the hospital, he surreptitiously made his escape. About three years ago I saw him for the first time since his escape from the hospital, and he told me he had quite a useful arm.

Retained Pessary.—Mrs. T. J. A., age 30, was confined with her third child, Feb. 16, 1885. The breech of the child presented, and after a tedious labor the child was born. One year afterward I was called to see patient with inflammation and great tenderness of the vagina. The hasty and imperfect per vaginam examination I was compelled to make led me to think that the hard ring-like condition at the upper part of the vagina which presented itself on this examination might have been produced by an inversion of uterus after the last labor, causing thereby the constricted parts of that organ to slough away. After having been annoyed with the case for a week and no improvement noted, I chloroformed my patient and extracted a hard, irregular round pessary. The pessary had been the cause of all the irritation and distress, and had been surreptitiously placed there by a midwife during a vaginal examination. The woman recovered soon afterward, but has since died of phthisis pulmonalis.

Obstruction of the Bowels, Intussusception.—W. K., age 32 years, a large fleshy man, a saloon keeper and beer drinker, was attacked June 6, 1890, with cramps and nausea at the stomach; did not know exactly when his bowels had been moved. On Sunday, June 8, 1890, was called and found him in the above condition though more intensified. I prescribed calomel and opium in 1 grain doses each, in powder every three hours, followed by warm water enema. I continued with this treatment till Monday when the pains had become very much more severe. He was in a kneeling posture with his belly resting on the side of the bed to gain relief. The hot water enema was continued. For the calomel and opium, I substituted a pill of a quarter of a grain each of extract of belladonna and sulphate of morphia to be given every hour. In the afternoon Dr. A. M. Pollock, of Pittsburg, was called in as counsel in the case. He suggested that the warm water injections and morphia and belladonna pills be continued as before, and in addition thereto he recommended one-half grain of sulphate of morphia hypodermatically, administered every six hours or until the pains might be controlled by the morphia and belladonna pills. This treatment was kept up uninterruptedly night and day till June 12, when there was some indication of fecal odor in the warm water enema passed from the bowels. The treatment was continued. On June 13 there was a thin fecal passage from the bowels with the warm water enema, and the hard and inflated bowels had subsided. He was considerably narcotized. At this time the morphia and belladonna pills and the hypodermatic injections of morphia were withdrawn. Strong coffee and Rochelle salts with hot enema were ordered to be given every three hours. On the afternoon of June 13 the bowels were well evacuated, pains subsided and the patient is in a fair way to recover. On the evening of June 13 he was attacked with delirium tremens which continued during June 13, June 14 and June 15. On that afternoon he slept three hours and also all of Sunday night. June 16, he was about the house and was well.

Some points in this case should not pass unnoticed. The amount of morphia and belladonna taken into the system in the four days was thirty-two and twenty-four grains respectively. The fact of his having delirium tremens would have precluded laparotomy.

Here we have the history of a case of obstruction of the bowels for just one week at least, and at no time during this obstruction did there arise a condition in the case which demanded an operation. If there had been a time during this obstruction in which the operation might have been demanded, it would have been early in the disease about Monday June 9, and that demand would have been only arbitrary. The point I wish to make is that there is no period in a case of obstruction of the bowels where an operation is called for until inflammation has set in, that we can prognosticate certainly that a case may not recover without an operation. Suppose this case had been operated on Monday, the third day of the obstruction, what would have been the result? Why certainly death! For no case of a recently opened belly could have survived such a strain as the belly of this man was subjected to during the time of his wild unmanageable delirium Friday night, Saturday and Saturday night, and Sunday forenoon, June 13, 14 and 15, so that in this case, at least, it may be said conversely to what I have heard a member in this Society state, that the laparotomist arrived just twenty-four hours too late to save life. The laparotomist, if one had been employed in this case, would have arrived just four days too soon in order to save the patient's life.

Abscess of the Liver.—In May, 1877, J. S., a farmer age 30, was admitted into the Pittsburg Infirmary suffering with what had been diagnosed phthisis pulmonalis by his medical attendant. He was very much emaciated, had cough, fever, expectoration, night sweats and anorexia. After he had been in the hospital a short time there was an abscess in the liver discovered to be forming and finally its contents, three pints of pus, were evacuated and the patient afterward rapidly convalesced.

Laryngeal Diphtheria.—M. R., a male aged two years and eleven months, was taken with slight cold, as the parents thought, on Sept. 5, 1892. The slight cold or cough got worse and worse, when on September 18 a doctor was called in, who told the parents that an operation was the only thing that would be likely to save the patient. The parents therefore looked with anxiety on the case and expected every moment that death would relieve the suffering of their child.

On September 19, 11 A.M., I saw the child, who was very restless, with extreme dyspnea; abdominal breathing, aphonia, beads of sweat standing out on the face, anxious countenance, ringing hard cough, injected eyes, patient reaching out from mother's arms to go to father, and from father back to mother again. No diphtheritic deposit could be seen in pharynx. I ordered 3 grains of calomel to be given every hour and inhalations from slaking lime every three hours and whisky *ad libitum*.

September 21. Patient whispers; cough croupy, breathing abdominal, bowels moved about five times since last visit. Countenance anxious, eyes injected. Has coughed up some membrane, pulse irritable and quick. Calomel and whisky

continued, together with inhalations from slaking lime. Membrane extends from larynx along trachea and bronchii.

September 23, 10 A.M. Patient rested better previous night. Had five stools. Breathing still difficult; patient restless. Slaking lime inhalations, calomel and whisky continued, together with lime water spray to throat.

September 25, 10 A.M. Breathing more freely, not so restless. Voice at intervals natural. Had seven stools since last visit and has expectorated membrane about twenty times, each of which added to the relief of the patient. The patient has taken a pint of whisky since I first saw him. Treatment continued.

September 27, 10 A.M. Took three-quarters of a pint of whisky and has had seven stools since last visit. Patient slept all last night. Has no difficulty in breathing. Voice aphonic. Ate well this morning for the first time since illness. Bronchii, trachea and larynx clear. Treatment continued.

September 29, 10 A.M. Has been speaking in higher nearly natural tones since Tuesday afternoon, coughs some and expectorates a little mucus. Breathing freely and natural. Bronchii, trachea and larynx still clear, sleeps and eats well. Has had ten stools and has taken three-quarters of a pint of whisky since last visit. Treatment, calomel and whisky every three hours.

October 1, 10 A.M. Appetite good. Has had six stools since last visit and took a quarter of a pint of whisky; sleeps well; voice a little husky; whisky and calomel ordered to be given every four hours.

October 3. Patient has had five stools and took one quarter of a pint of whisky since last visit. Patient has about recovered, except there is still a huskiness in the voice due to a relaxed condition of the vocal chords. Dropped calomel and whisky and put patient on the following prescription:

R. Tinc. ferri chlor . . . . . gtt xxx ij
Potassii chlorates . . . . . gr. x ij—(12).
Syrupi tolutanus . . . . .
Syrupi simplex . . . . . āā ℥ij.
Aquæ . . . . . ℥iss.
M. Sig. A teaspoonful three times a day.

October 7. The patient has entirely recovered.

During this child's sickness he took 876 grains of calomel and about a quart of whisky. I assert that calomel, in large and frequent doses, given a child suffering with laryngeal diphtheria prevents further exudation of membrane which will finally become detached and expectorated, and hence in the majority of cases thus treated if seen in the early part of the disease there is no necessity for intubation or tracheotomy.

The above makes a record of three cases of laryngeal diphtheria that have recovered under my care with the calomel and whisky treatment.

Renal Colic, Morphia, Convulsion.—I. K., age 32, well built and weight 160 pounds; suffering with orchitis, was attacked with renal colic on the evening of Feb. 14, 1894. At 8 P.M. he took an ordinary dose of morphin to relieve pain which afterward became more intense so that at 9:40 P.M. I gave him a hypodermatic injection of one-quarter of a grain of morphin with one one-hundred-and-fiftieth of a grain of sulphate of atropia. For two minutes after the injection he felt nausea at the stomach when he was seized with a convulsion and remained in this convulsion three minutes, after which he returned to consciousness and said he felt better.

DISLOCATION AND DOUBLE FRACTURE OF THE UPPER THIRD OF THE HUMERUS.

Read before the Cincinnati Academy of Medicine, June 4, 1894.

BY B. MERRILL RICKETTS, M.D.
CINCINNATI, OHIO.

For the surgical history of this unfortunate state of affairs I can not do better than to refer those who wish to inform themselves upon the subject, to Dr. McBurney's paper and report of a case of this kind published in the *Annals of Surgery*, April, 1894. This is the most complete and concise article that I have read. It is more especially interesting as he offers the means of a plan of reducing the disarticulation which he himself was the first to devise and execute. This was done July 1, 1893, and has been the means of revolutionizing the treatment of this class of cases when the condition of the patient will permit. That no surgeon thus far reported has met with more than five cases shows that the accident is exceedingly rare. The cause is obscure, the statements of the injured being very unreliable.

It seems probable that in the larger number of instances the dislocation is produced by the usual mechanism—that is through violent sudden abduction of the arm; as in a fall upon the hand or elbow, and the head of the bone having become fixed in its new situation that fracture takes place through continued abduction, combined perhaps with force rotation, the edge of the glenoid cavity or of the acromion acting as a fulcrum.

The complication has also been produced a good many times by the surgeon in his efforts to reduce a simple dislocation. The dislocation has been usually subcoracoid, occasionally subglenoid and very rarely subspinous. Unless there is very much swelling there should not be much difficulty in making a diagnosis, as the head of the bone can be felt and crepitus defined.

The treatment formerly practiced was either immediate reduction or reduction by using the arm as a lever after the bones have become firmly united.

Thirty-six of the eighty cases reported were reduced, while forty-four were failures and as six of the eighty died as the result of traction, rotation, etc., it will be seen that any attempt at reduction by any means other than open arthrotomy is exceedingly dangerous.

The fracture in the 117 cases reported was in 69 at the surgical neck; in 27 at the anatomic neck; at the "neck" in 11; both anatomic and surgical neck were fractured in 6 cases; 1 case was comminuted, and the 'upper part' of the humerus was fractured in 3, "thus showing the line of fracture to be varied."

The very unsatisfactory results from former treatment, together with a mortality from manipulation alone being almost as high as that of hip joint, amputations should convince the surgeon and practitioner in general that other means should be adopted.

PLANS OF TREATMENT.

1. Immediate reduction by direct pressure upon the head.
2. Manipulation after union of fracture.
3. Arthrotomy and reduction of the head.
4. Resection of head of humerus.

Immediate reduction by direct pressure upon the head should be attempted but without extension upon the arm, even though it is known that the periosteum has not become detached. If the fragment is short, reduction may be accomplished but perseverance should not be indulged in.

2. Manipulation after union of fracture being so dangerous and unsatisfactory must, I believe, be relegated. Arteries, nerves and veins may be injured to an irreparable degree, beside the loss of a life may be the result. The present mortality being something like 15 per cent.

Resection of the head of the humerus should be made in old standing cases of dislocation causing pain and the loss of the use of the arm; in cases where reduction can not be accomplished by any

means at any time and especially in young subjects. As a rule the arm is more useful after the resection of the head in adult life than where the head is allowed to remain intact. It is invariably better after resection in young subjects.

Arthrotomy and reduction of the head is surely the most rational means of treating this complicated injury if age or the condition of the patient following the injury will permit. The sooner after the injury the operation can be made the greater are the chances for a reduction and a useful arm.

If the dislocation is reduced the fracture can be more satisfactorily treated, especially if the fracture does not pass directly through the head. If reduction can not be accomplished by means of an arthrotomy, resection of the head should be made, as reduction could not in all probability be made later or by any means, and as the head left in these dislocations is a source of great pain and annoyance it is all the more advisable that it should not be allowed to remain if reduction can not be accomplished.

Case 1.—Mr. D., age 49; white and slender; in a fair physical condition; fell from a trestle fourteen feet upon the hard ground, receiving the blow upon the left shoulder, at noon time on Feb. 21, 1894. I examined the patient at 5 P.M. on the same day, finding a subcoracoid dislocation together with what afterward proved to be a fracture of both the surgical and anatomic neck. Crepitus could be felt, thus satisfying me of at least one fracture. The head could be plainly felt beneath the much swollen tissue. I at once decided to take him to my private hospital; night overtaking me I gave the patient morphia to relieve the pain about the shoulder until the following day. On the morning of the following day the swelling was much more extensive and the temperature was 101½ F. There was also great tenderness, pain and discoloration over the entire upper arm, shoulder and scapular region.

Chloroform was given and an attempt made at reduction, first by manipulation of the head without traction. Then with both manipulation and traction, the traction not having been made to any considerable degree. Two or three attempts proving fruitless I decided to discontinue all efforts and await developments.

I could not at this time satisfy myself that more than one fracture existed; in fact I did not suspect the second one being present; however, I believed that there was a fracture of acromion, which was afterward found not to exist. The upper arm was placed in metallic splints and abducted. His physical condition was at a low ebb, the shock having been severe. Indeed it was a question as to whether or not gangrene would not result. While I informed the family of the gravity of the case, I suggested that arthrotomy could be made at any time his condition would permit.

The pain continued to be severe, the temperature 102 and the injured parts cold, swollen and very much discolored. This state of affairs existed for two weeks in spite of the application of dry heat. Morphia was used freely for the relief of pain. At the end of the fifteenth day the depression was so great that the head could not be raised from the pillow. It was not until the end of the sixth week that the patient could sit up in bed.

It was at the end of this time Dr. McBurney's article appeared in the *Annals of Surgery*. I immediately proceeded to have a hook made and prepared to at least attempt an arthrotomy, believing that firm bony union had resulted, especially as I had kept the patient under the influence of mercury during the first three weeks, a rule I usually adopt in cases of fracture in long bones. Realizing that within this short time the glenoid cavity could be practically obliterated by newly organized tissue, I believed the end justified the means, so proceeded to make the arthrotomy under the influence of chloroform.

An incision three inches long, one and one-half inches below and parallel to the clavicle enabled me to reach the head of the humerus without difficulty. Both the anatomic and surgical necks were found to be fractured and ununited. The surface of the head had become adherent with the soft parts which were greatly infiltrated with a dark bloody serum.

Non-union of the fragments prevented further operative procedure. The wound was closed with silkworm sutures, the arm brought to the chest and the lower placed at a right angle to the upper arm and firmly secured with adhesive strips. Much comfort was experienced in the change of position of the arm and the patient left for his home at the end of ten days, hoping that the country air would add to chances of complete union of the fragments. During his five weeks absence from the city he has gained in weight and general appearance, but has suffered a great deal except during the last week when he has been practically free from pain. The question now is, Should the head have been resected at the time of the attempted arthrotomy? As the indications for the resection of the head of the humerus in irreducible luxations forms the topic of another paper, which I will soon present, I do not care to further occupy your time.

BOOK NOTICES.

A Treatise on Appendicitis. By GEO. R. FOWLER, M.D., Examiner in Surgery, etc. Cl., pp. 190. Philadelphia: J. B. Lippincott Company. 1894. Chicago: A. C. McClurg & Co. Price, $2.

The book consists of thirteen chapters which have been reprinted from the *Annals of Surgery* after correction and revision. Chapter I considers the Anatomy of the Parts Involved; II, The Inflammatory Lesions of the Appendix; III, Acute Appendicitis, Clinical History; IV, Special Types of Appendicitis; V, Complications and Sequestræ; VI, Etiology; VII, Bacteriologic Conditions; VIII, Pathologic Anatomy; IX, Diagnosis; X, Prognosis; XI, Treatment (General); XII, Operative Treatment; XIII, After Treatment.

In regard to the etiology of the affection, the author asserts the rarity with which foreign bodies, such as seeds, are found within the appendix, and he asserts that the disease is due to: 1, infection from intestinal microörganisms; 2, to circulatory disturbances, 3, accidentally imprisoned fecal matter. Notwithstanding the dictum of our author, the reviewer insists that he has many times observed seeds in the appendix, and indeed has seen them forming the center of an extremely hard ball of fecal matter.

In the matter of treatment the author states, that in the majority of cases operative treatment is required, and he properly insists on such patients being taken to a well equipped hospital rather than to attempt "makeshift" operations at the patient's house. He gives a couple of sketches showing McNaughton's invalid coach, with its pneumatic tires, whereby the patient may be taken to hospital without a jar.

The book is an excellent one as far as it goes, but it falls considerably short of being exhaustive.

Flint's Practice of Medicine. A Treatise on the Principles and Practice of Medicine. Designed for the use of students and practitioners of medicine. By AUSTIN FLINT, M.D., LL.D., Professor of the Principles and Practice of Medicine, and of Clinical Medicine in Bellevue Hospital Medical College. New (7th) edition, thoroughly revised by FREDERICK P. HENRY, M.D., Professor of the Principles and Practice of Medicine in the Woman's Medical College of Pennsylvania, Philadelphia. In one handsome octavo volume of 1,143 pages, with illustrations. Cloth, $5; leather, $6. Philadelphia: Lea Brothers & Co. 1894.

The only *radical* change made in this well-known textbook consists in the entire omission of the section on General Pathology and confining the work to Special Pathology. The editor has added articles on Pulsating Pleurisy, "Weil's Disease," Syringomyelia, Beri-Beri, Hereditary Chorea, Acromegaly, Raynaud's Disease, Leprosy, Influenza, Lithemia, Rickets, Actimomycosis, Anthrax and Glanders. Throughout the book the editor has not hesitated to make additions where it was necessary to bring the subject *en rapport* with the accepted pathology of the day. The great charm of the book has been retained, however, by handing down unimpaired the clinical description of diseases. In

this particular, none of his countrymen have surpassed Flint, and his careful, clear expression will remain as a model for many years to come. It is to be regretted that the editor has not made use of the metric system in the prescription writing, the old British weights and measures being invariably retained.

Text-book of Normal Histology including an Account of the Tissues and of the Organs. By GEORGE A. PIERSOL, M.D., Professor of Anatomy in the University of Pennsylvania. With four hundred and nine illustrations, of which three hundred and fifty-eight are from original drawings by the author. Second edition. Cl., pp. 439. Philadelphia: J. B. Lippincott Company. 1894.

The first edition of this book was issued in 1893, and so favorable has been its reception that a second edition was made necessary within a year: few changes therefore have been made.

The study of normal histology, the essence of anatomy, naturally precedes that of pathology, and no student can more thoroughly prepare himself for the study of morbid changes, than by making the intimate acquaintance of the natural structure. As a guide to this study, Piersol will be found a learned and trustworthy one. There are nineteen chapters on histology proper, and an appendix on methods which will be found most useful. The plan of the book is admirably adapted for students and in the practice of the plan adopted in most medical colleges of regular recitations, there is no work on histology known to us, that fills the purpose better.

Addresses, Papers and Discussions in the Section on Surgery and Anatomy, at the Forty-fifth Annual Meeting of the AMERICAN MEDICAL ASSOCIATION, held at San Francisco, Cal., June, 1894. Cl., pp. 414. Chicago. 1894.

It was a happy thought on the part of the Business Committee of the ASSOCIATION, to commend the re-printing of the Section books. This volume, containing as its title indicates, the work of the Section under the Presidency of John B. Roberts, of Philadelphia, is one of the best surgical year books issued. The papers have all been printed in this JOURNAL. A comprehensive index adds to the value of the book. Chairman Roberts is to be congratulated on the high scientific value of the work of this Section.

McDonald's Cook County Medical Directory. A list of physicians in the county arranged alphabetically by post-offices; Chicago Physicians and Druggists arranged alphabetically and by streets; Chicago Dentists arranged alphabetically. Also, Medical and Pharmaceutical Laws, Medical and Pharmaceutical Colleges (with Faculty of each), National, State and County Medical Societies, with officers, time and place of meeting, Hospitals (with attending Staff), Asylums, Dispensaries, Homes and other Charitable, Benevolent and Humane Organizations. August, 1894. Eighth Edition. For sale by E. H. Colegrove & Co. Price $2.50.

The annual edition of this well known directory lies upon our table. The present volume follows the well known lines of its predecessor, and is indispensable to all consultants, and those who wish to keep posted in the whereabouts of the medical men of Cook County.

Transactions of the Medical Association of the State of Alabama (the State Board of Health), held at Birmingham, April 17–20, 1894. Cl., pp. 418. Montgomery: The Brown Printing Co. 1894.

The annual reports of this Society are unique, for this Society by law controls the State Board of Medical Examiners and the State Board of Health; the executive officer of the latter body is our well-known fellow member, Dr. Jerome Cochran. The "Message" of the President is a model which it would be well if other Presidents of societies could follow. The annual reports of the senior and junior Vice-Presidents contain much interesting matter; they mention the work of the County Examining Boards.

The reports include: The report of the Board of Censors; The report of the State Board of Medical Examiners; The report of the State Board of Health and supplementary papers. The oration by Dr. W. H. Blake is one worthy of the Society and of the occasion. The current volume of the Alabama Association may well head the list of State Society Transactions by virtue of general superiority of work no less than by virtue of the place of the State in our National Alphabet.

Transactions of the Medical Society of the State of California, Session of 1894. Cl., pp. 337.

This is a handsomely printed volume containing the proceedings, papers and addresses of the annual meeting held in San José, April 17, 1894. The papers are excellent and well edited. The address of the President, Dr. Kinyoun, eloquently points out the necessity for organization and shows that of about 2,700 regularly qualified practitioners in California only 360 belong to the State Medical Society. Medical union is the great need of the profession throughout the United States, not less than in California.

Transactions of the Forty-fourth Annual Meeting of the Illinois State Medical Society, held in Decatur, May 15–17, 1894. Cl., pp. 568. Chicago: P. F. Pettibone & Co. 1894.

The frontispiece to this volume is a steel engraving of the late Charles Warrington Earle, whose biography is well told by the committtee on necrology. There is also an excellent half tone portrait of the late John H. Rauch. The general addresses in this volume, by Prof. Victor C. Vaughan, Prof. Edmund Andrews, and Prof. Wm. E. Quine are above the usual level of annual medical society orations. As they have already been published in full in the JOURNAL our readers are qualified to judge of their exceptional merit. The papers are unusually good and the discussions have been fairly reported. The list of names of gentlemen reading papers includes most of those best known in the State, and many of international reputation. The Soeiety will next year meet at Springfield under the Presidency of Prof. Daniel R. Brower.

Transactions of the Michigan State Medical Society for the Year 1894. Vol. XVIII. Cl., pp. 589. Detroit. 1894.

This portly volume contains rather more than the usual number of papers, and constitutes one of the best hitherto issued.

The President, Dr. Boise, in his address recommended that every local society should be a part of the State Society, and that every member of the local and State Societies become a member of the AMERICAN MEDICAL ASSOCIATION, by the title of FELLOW OF THE AMERICAN MEDICAL ASSOCIATION.

The paper by Dr. Victor C. Vaughan on Nuclein and Nuclein Therapy, is the same as that read by him at the meeting of the Illinois State Medical Society and published in this JOURNAL, June 2, 1894.

The discussion on Tuberculosis by Drs. Shurly, Gibbs, Vaughan and Baker was an interesting one, and we might well say that the discussions on papers in the transactions of our various societies, are frequently of more practical value than the papers which call them forth. The Secretary, Dr. Hitchcock, should be complimented on the promptness with which the volume was issued and the careful manner in which it is edited.

Transactions of the Forty-ninth Annual Meeting of the Ohio State Medical Society, held at Zanesville, 1894. Cl., pp. 488. Toledo. 1894.

The volume has for its frontispiece a portrait of the President, Dr. N. P. Dandridge. The annual address of its President is mostly occupied with a discussion of the professional need for more perfect organization, the duty of support of the State Board of Health, and the necessity for preliminary training in biology, chemistry and physics. Prof. Kellicott, of the State University, has a paper on the method of study recommended in that institution, as a course preparatory to the study of medicine.

There are many interesting papers in the volume by well-known authors.

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On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

SATURDAY, SEPTEMBER 8, 1894.

THE FOREST FIRES.

This week is one that will long be remembered in Northern Wisconsin, Northeastern Minnesota and Northwestern Michigan. This region, bordering upon Lake Superior, comprises about all there is left within the United States of the magnificent pine forests of the country of the great lakes. There had been a long drouth; the dead leaves, always thick in a pine forest, became thoroughly dry, the small pools had evaporated under a hot sun, and many of the marshes had become dry as dust. In such conditions, an accidental spark from a passing locomotive engine; ashes blowing from the camp fire of a hunter, or from the pipe of a careless woodsman, was all that was necessary to start the forest fire. A strong breeze fanned the flames into fury; houses, trees and bridges were wrapped in fire and smoke, and every living thing was in danger. More than six hundred square miles of pine land have been burned over, a dozen villages destroyed and many lives lost.

It is not probable that the mortality will ever be accurately stated, as the victims in many instances were living in the forest far removed from human assistance. The relief committee which has been formed at Pine City, Minn., has authorized the statement that at least four hundred and fifty persons have been burned to death, or died asphyxiated, and that twelve hundred persons have escaped only to be absolutely penniless and homeless. Many bodies have been recovered from wells and cisterns, where the unfortunate wretches had fled for safety when the flames rushed upon them. Fifteen dead bodies were found in a well, in the ruins of the village of Sandstone. Hundreds are suffering from severe burns.

So widespread and distressing a calamity could not fail to excite the utmost sympathy, and hospitals have been hastily organized and carloads of provisions are on the way. Our own profession, as usual, have been foremost in deeds of mercy, and DRS. LEWIS, NORTON, PERKINS and ALLEN, who are in the midst of the scene of suffering, have done and are doing full credit to the noblest instincts of our profession, which in times of distress discusses nothing but the best and most speedy means of relief to suffering humanity.

AN HITHERTO UNDESCRIBED FAMILY FORM OF MOTOR NERVE TROUBLE DUE TO COLD.

DR. EZRA CLARK RICH, of Ogden City, Utah, *Medical News*, August 25, describes a unique and hitherto unnoticed form of motor trouble that adds to the rapidly growing list of family forms of nervous trouble.

DR. RICH designates the condition as one of paralysis, and if we apply the criterion of loss of voluntary motion alone we must regard the term as correct; at least the limbs are immovable. Now this may arise from a condition of hyperkinesis; the movement of a limb depends quite as much upon the ability of the person to relax the opposing muscles as in contracting those necessary to effect the movement. In catalepsy, katatonia and allied conditions there is no paralysis in the strict sense of the term, yet the affected person is in whole or in part unable to make voluntary muscular movements. In the affection described by DR. RICH we may have an allied condition. It would have been exceedingly interesting if the writer could have given us a study of the electric nerve and muscle reactions while the patients were in this state.

The affected persons number twenty-two, all in one family, embracing five generations. The disease never skips one generation to appear in the next, but when a child does not inherit the affection it is ended so far as its offspring are concerned.

The affection is alike in all the affected members of the family. When brought in contact with a cold damp atmosphere the muscles most exposed soon become fixed and immovable. The muscles of the face are most frequently affected, and in that case the expression becomes fixed, one side of the face may be drawn up and the other straight, and the suddenness of the disorder is indicated by the fact that the features may be fixed in the act of crying, laughing or whistling. Next in frequency the arms are affected, the muscles of the hands and forearms, owing to their exposed position being first attacked. The muscles are always attacked in groups; thus one thigh may be affected and the legs escape, or this may be reversed. One finger, arm or hand may be affected and the remainder of the body be normal. The tongue is easily affected by taking snow or ice in the mouth; when any of it is swallowed the function of deglutition is abolished for a time.

A severe attack is related as having occurred in the person of a young woman, who after dancing

and becoming fatigued had gone to bed in a cold room without removing her under clothing. She was soon helpless and could not move any part of her body except her tongue. The intellect remained clear and conversation could be carried on as well as at other times excepting that the lips could not be moved.

The sensation in affected parts is not altered, though the patients complain of a "drawing feeling" in the limb. Recovery is always complete and there is no pain either during the period of fixation of the muscles or afterward.

It is not every exposure to cold that brings on an attack, but fatigue, cold and dampness combined. Therefore the affection frequently occurs during the summer months. Muscles that are comparatively at rest are affected more frequently than those which are actively exercised. Walking on a cold day and sitting down to rest would be certain to bring on an attack and would be almost suicidal in one of these patients if assistance were not at hand.

Regarding the pathology of the affection little is to be said. DR. RICH suggests that it may be an obscure vasomotor change in the muscles. The fact that it is a family disease stamps it as one of those rare and peculiar affections on which the present knowledge of the pathology and physiology of the nervous system throws no light.

THE NATURE OF INFECTION AND IMMUNITY IN CHOLERA.

The continued presence of cholera in Europe has been the occasion of many new researches on the biology of the cholera bacillus and its mode of action in the animal body. Foremost among these are several publications from KOCH'S laboratory by R. PFEIFFER, in conjunction with WASSERMAN, ISSAEFF and KOLLE (in recent numbers of the *Zeitschrift f. Hygiene*). Their experiments were made mostly with injection of cholera bacilli into the peritoneal cavity of guinea-pigs. While the mode of infection, so different from the natural way of entrance of the germs in man, has no direct bearing upon the etiology of human cholera, it has led to important knowledge concerning the struggle between the bacilli and the animal system.

Older cultures long kept in the laboratory lose their virulence gradually. Recent (solid) cultures, however, made from the discharges in cholera were found fatal to small guinea-pigs if injected in the quantity of about one-sixth of a milligram. The measure used in the laboratory was the quantity adhering to a platinum wire loop—by weight two milligrams, which dose was suspended in broth and subdivided. The injection in fresh animals causes no visible symptoms for the first four hours, except slight rise of temperature. After this time the temperature sinks many degrees and excessive prostration leads to death within twenty-four hours or less. The effects of the bacilli are produced by a poison contained within their bodies which is not soluble in the culture fluids. This toxin of cholera bacilli is very easily altered by almost any mode of killing the germs,except by means of chloroform vapor. If altered by any destructive influence a comparatively stable but less poisonous body is formed.

Of the toxin of bacilli killed by chloroform, about thirty to forty times as large a dose is requisite in order to kill the animal, than when the living bacilli are used. This is due to the fact that the living germs *multiply* in the peritoneal cavity for some four hours, after which time only the peritoneal fluid begins to destroy them. Accordingly there are scarcely any effects produced during the first hours after inoculation with live germs, while if the larger quantity of dead bacilli is injected the symptoms of poisoning begin at once. If the culture is injected into the blood vessels, instead of into the peritoneal cavity, the dissolution of the bacillary cells begins immediately, the germs can not multiply, but the poison is set free and hence in this case there is no period of incubation and the required dose is the same, whether the bacilli be injected alive or after they are killed by chloroform.

When an animal recovers from inoculation with an insufficient quantity of germs or from poisoning with a non-fatal dose of the cholera-toxin it is found less susceptible to subsequent inoculations. By repeating the infections with increasing doses of living germs every three to four days about six or seven times, a degree of immunity can be established which permits the animal to resist a quantity of live germs forty times larger than the minimal fatal dose. Beyond this limit, however, the immunity can not be increased.

Unlike the state of affairs as it exists in diphtheria and tetanus, the animal which has been made refractory against the live cholera bacilli is not proof against their toxin. The inoculated bacilli can not multiply in the immune body, but their toxin results in poisoning proportionate to the dose employed. Hence although the immune animal will not die from thirty or forty times the fatal dose, it is severely poisoned thereby.

It had been previously learned by other observers that within a few days after recovery from cholera infection the blood serum acquires protective powers. When it is mixed with a fatal dose of living bacilli and this mixture is injected into the peritoneal cavity of a fresh animal this animal will escape death, but like other immune animals it shows the symptoms of poisoning. The serum therefore while possessing protective properties is not *anti-toxic* in the proper sense of the word, and even in large quantity can not

protect against infection with more living bacilli than correspond to the fatal dose of toxin. On the other hand, PFEIFFER found that within the limits described, the serum of highly immune animals is really protective in remarkably small quantities—even three milligrams serum being sufficient to avert death.

It has been asserted by KLEIN and repeated by HUEPPE and SOBERNHEIM, that other bacteria injected into the peritoneal cavity produce the same symptoms and results as the cholera bacilli, and that if an animal recovers from such a (mild) infection it is now proof against cholera infection. They conclude, therefore, that there is nothing specific in either the intra-peritoneal cholera infection nor in the subsequent immunity.

While PFEIFER confirms it as a fact that intraperitoneal injections of typhoid bacilli, colon bacteria and various vibrios resemble clinically and pathologically the infection by cholera bacilli, he still asserts that the latter is a specific process due to a poison, perhaps comparable, but not identical with the toxin of any other bacterial species. In making this plea he first contends that while it is true that recovery from intra-peritoneal inoculation with some other bacteria protects to some extent against cholera infection, there is still a radical difference between the transient protection and the real immunity against cholera. Intra-peritoneal inoculation with these different bacteria, as well as with cholera bacilli produces a suppurative peritonitis, or at least an intra-peritoneal exudate rich in leucocytes. PFEIFFER, however, shows that any disturbance which causes an exudation of leucocytes, such as the injection of urine, normal blood serum, nuclein solution or even large quantities of $\frac{3}{4}$ per cent. salt water gives a temporary increased resistance against subsequent cholera infection. But this condition lasts onlp up to ten or at the most fifteen days, while the immunity after recovery from the specific infection exists still after the lapse of three or four months.

Furthermore, the protection following any such non-specific peritonitis can not be carried to the same degree quantitatively as the immunity after specific infection.

In another even more conclusive manner, PFEIFFER showed that recovery from cholera poisoning is followed by a specific immunity not obtainable by intra-peritoneal infection with any other germs. If after complete recovery the serum of the now immune animal be tested as to its protective effects it will be found that the serum, when used in suitably small doses can protect other animals *only* against that variety of bacteria, with which the first animal had been inoculated. In other words, the protective effect of the serum is strictly specific. Indeed PFEIFFER claims that the specific protection afforded by the injection of such serum against a simultaneous inoculation with living germs is a most delicate test as to whether these germs are identical with the variety used for inoculating the animal which furnished the serum. By this method he has been able to distinguish between true cholera bacilli and other vibrios which resembled them to a confusing extent, both in culture-appearances and in their action upon animals.

One of the most interesting points in PFEIFFER's researches is the explanation of the recovery and immunity. Aspirations from the peritoneal cavity with a fine pipette showed that the cholera bacilli multiply apparently unhampered for some four hours in animals not previously infected. At the end of this time the bacilli begin to disintegrate, breaking up into small globules and ultimately disappearing. If the dose has not been too large the peritoneal cavity may become entirely sterile one or two hours later, even though the absorbed toxin finally kills the animal. In immune animals, however, the disintegration of the bacilli begins at once after the injection. Likewise whenever there is partial protection by reason of a suppurative peritonitis from other causes, or when protective serum is injected with the living bacilli they are seen to break up within a few minutes. All these instances are accompanied by intense emigration of leucocytes.

At first sight, these observations seem to be a strong support for METCHNIKOFF's phagocyte theory, and indeed this observer has previously held up experimental cholera infection as a confirmation of the importance of phagocytes.

PFEIFFER, however, considers the rôle of the leucocytes as a secondary one, and bases his position on the important point that in the immune peritoneal cavity the disintegration of the bacilli begins and proceeds very far before the migration of wandering cells has fairly set in. Within the first ten minutes after the injection the peritoneal fluid contains scarcely any cells and still the majority of the introduced germs are broken up within this time in the immune animal. He hence reaches the apparently inevitable conclusion that in the immune animal the peritoneal tissue secretes a substance destructive to the bacilli. This substance is not a common bactericide body but exerts a specific effect on one variety of bacteria only and not on others. For when PFEIFFER injected into a guinea-pig immunized against cholera a mixture of cholera bacilla and other vibrio only the cholera bacilli were at once broken up, the other surviving, while conversely when an animal had been made refractory against another vibrio, it was only this variety which succumbed while the cholera bacilli continued to multiply. The specific bactericide is formed by the peritoneum itself, its secretion continuing for some 20 minutes after the circulation

has ceased. It does not exist in the body pre-formed, but is secreted only in the presence of the specific bacilli and is evidently used up as the bacilli are being destroyed. Still when the peritoneal fluid of an immune animal is aspirated just at the end of the time when the introduced bacilli have been disintegrated it can be seen under the microscope that this fluid will break up cholera bacilli, but is without influence on other bacteria.

PFEIFFER hence refers the recovery from cholera infection and the subsequent immunity to the property which the tissues acquire by virtue of their struggle with cholera bacilli, viz., of secreting a substance specifically destructive to these germs. The same property is given to the tissues temporarily by the injection of serum from another immune animal.

ARGUMENTUM AD HOMINEM.

Dear reader, have you done your whole duty by the JOURNAL and the ASSOCIATION? If each member will influence *one* physician to become a member or subscriber, the JOURNAL would go at once to the front. It is already great, if we refer to the achievements of the past year, but the whole profession would be prouder of it, if it so far led all the rest as to make rivalry out of the question. Let us all help.

AN OPPORTUNITY FOR MEDICAL STUDENTS.

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CORRESPONDENCE.

"Inebriety."

ORAN, SCOTT CO., MO., September, 1894.

To the Editor:—Dr. Crothers' articles in the August 18 and 25 numbers of the JOURNAL suggest the following thoughts: *Old* theories (or facts) are not necessarily false. Because whisky drinking (to excess) has long been considered a vice, time alone would not make this idea false one. Truth does not lose value by age. If drunkenness was ever a vice it is evidently one to-day. The preponderance of evidence is still in favor of the *old idea*. A few leading physicians believe that drunkenness is a disease. The only cause of this error is the mistake often made of taking the *effect* for the *cause*. Excessive drinking is a *cause* of disease, not a *disease per se*. Let us theorize a little. I have a patient who is drunk for the first time. I am trying to make a diagnosis. The man is unconscious, limber and has all the symptoms of being drunk. I say he is drunk. What caused it? Too much liquor. Is he diseased? No. I have another patient who is under the influence of ether administered by me. He, too, is drunk. Is he diseased? No; merely under the influence of an anesthetic. Neither patient is harmed unless the dose is too large or kept up too long. No one would think of calling these cases diseased because there is no harm done either of them by this first dose of alcohol or ether. But suppose we keep up the dosing (the cause) of trouble. Soon we have disease. The ether patient develops pneumonia or nephritis, the other patient any one of the many troubles caused by the excessive use of alcohol. Next we find a toper who has been drunk off and on for a number of years. Examining him closely we find a diseased liver or kidney or both, but he is sober now, his reasoning faculties are good. He has as perfect a horror of crime as any one. He has no use for a drunken man, will not associate with one. You inquire farther into his condition. Ask him if has any desire for drink. Oh, yes; his appetite is good for whisky, cider and watermelon. (I live in the melon country.) He takes the two last mentioned but no whisky. Why? Because he knows it will cause him trouble. Now the question arises: Is this man insane or not? He has drank whisky until his liver and kidneys are diseased, but he is not insane any more than the man who has liver and kidney disease from other causes. His brain has undergone the influence of many doses of alcohol but yet has not lost its functions. Judging by his acts you can see no evidence of insanity. He behaves like a sane man and does business like a sane man. Everybody, *physicians* and all, say that he is a reliable, straightforward, upright, truthful gentleman. Then how can Dr. Crothers say this is a mistake; that this man is really crazy, and if he in anger commits crime he ought not to be punished for it the same as some other man who has never been drunk?

Now we will go a little farther. Suppose this man knows that whisky will make him drunk and crazy while under its influence, and then voluntarily gets drunk and commits crime, get sober again and being questioned replies, Yes, I knew that whisky would craze me but I did not care. I wanted to get on a drunk and have a big time, but while I was drunk I struck my neighbor who insulted me. I would not have done so if I had been sober, but when I am drunk I am quarrelsome. Is this man innocent or guilty? Is he not guilty of two crimes: One was getting drunk, the other fighting. The law, experience, common sense and reason say, Yes; but Dr. Crothers and a few others say, Oh no; this is not a bad man, he is insane; he ought to be sent to the hospital and cured instead of being punished. Give him *pure air*, good food, nice tonics and cheerful surroundings and after a while his mind will be restored and he will not commit crime. This last theory is founded upon a false premise and will never be adopted. The results of such a theory are too apparent for the law-makers ever to adopt it. The hospital is the place for sick people, but the criminal deserves punishment. If not, all theories of right government heretofore are false and there is no sense in any of it. Kindness is due to the innocent and ignorant, punishment is due the vicious and criminal. These facts are so old and so true that all former laws are based upon them. The new order will be: Hospitals for the vicious, pleasant things for the wife-beater, food for the street-loafer, a new constitution dictated by the modern physicians who have discovered that *vice* and *insanity* are one and the *same thing*.

Now a few words in regard to the "poisoned air" theory. This is "*airy*," sure enough. Did Dr. Crothers ever visit the blue grass region of Kentucky where the air is as pure as the whisky, and where the "Kentucky Colonel" shoots his opponent just to see him fall? *Pure air*. It will not keep a man from getting drunk, neither will poisoned air make him drink. The air has a good deal to do with health, but cuts a small figure in *habit*. Men get drunk in all kinds of air. The correct solution of men sobering up who leave town is in the fact that they leave the *whisky* and *evil associates behind*. Let a man take his *bottle* and his *chums* to the mountains with him, and they will drink as long as the whisky holds out. It is no trouble to explain something that is so, but when men undertake to explain something

that is not *so*, they deal in *big words* and befog themselves and some of their hearers. Better let the law alone, gentlemen, and attend to sick people. The drunkard is not being imposed upon but is an imposition himself. Let your sympathy run out after those who deserve it.

Very respectfully, W. P. HOWLE, M.D.

SOCIETY NEWS.

American Public Health Association.—RAILROAD RATES AND OTHER ITEMS OF INTEREST.—The twenty-second annual meeting of this Association will convene in Association Hall, Y. M. C. A. Building, Dominion Square, Montreal, Canada, Tuesday, September 25, at 9 A.M., and continue four days. The following topics have been selected for consideration:

1. The pollution of water supplies.
2. The disposal of garbage and refuse.
3. Animal diseases and animal food.
4. The nomenclature of diseases and forms of statistics.
5. Protective inoculations in infectious diseases.
6. National health legislation.
7. The cause and prevention of diphtheria.
8. Causes and prevention of infant mortality.
9. The restriction and prevention of tuberculosis.
10. Car sanitation.
11. The prevention of the spread of yellow fever.

Special committees have been appointed to discuss these subjects. The Executive Committe have announced the following additional subjects, upon which papers are invited:

12. On the education of the young in principles of hygiene.
13. Private destruction of household garbage and refuse.
14. Disinfection of dwellings after infectious diseases.
15. Inspection of school children with reference to the eyesight.

Papers will be received on miscellaneous, sanitary and hygienic subjects, but preference will be given to the topics announced above.

The headquarters of the Executive Committee will be at the Hotel Windsor, immediately opposite the place of meeting. Railroad rates will be a fare and one-third. Tickets issued on the certificate plan, and include practically all the railroads of the country east of a line running north and south through Chicago, Ill. Western visitors will please note that the Western Passenger Association up to present date has declined to grant reduced rates. Delegates and members and their families residing at points west, northwest and southwest of Chicago who contemplate attending the meeting should purchase tickets to Chicago (providing they go that way), then procure through tickets from that city to Montreal, taking a receipt from the ticket agent for the amount paid.

Dr. Liston H. Montgomery, of Chicago, has sent to the editor of the JOURNAL a complete description of a proposed attractive itinerary that has been tendered to himself and others. The route going from Chicago is the Wabash railroad to Detroit, thence via the Canadian Pacific line through to the city of Montreal without change of cars. Starting from Chicago on Sunday afternoon September 23, at 3 o'clock, in a vestibule train, consisting of Wagner sleeping and parlor cars, as well as those operated by the Canadian Pacific railway system, this train will arrive at Detroit at 11:20 o'clock Sunday evening; Toronto, Monday morning at 8 o'clock, and Montreal at 7:55 o'clock Monday evening the 24th inst., passing through a number of important cities and beautiful country that comprises the "Garden of Ontario."

Stopover privileges will be granted to those desiring it, to remain in Toronto one day either going to, or returning from the meeting. Several attractions will be afforded the visitors while at Montreal. Notably that provided by the local Committee of Arrangements for a grand excursion to Grosse Isle. This excursion alone embraces a tour upwards of 400 miles that will be provided (gratis) to all members in attendance at the meetings and their ladies, down the St. Lawrence, and includes the privilege of a stopover at quaint old Quebec. Arrangements for other detour trips are in progress, notably to Ottawa, the capital city of the Dominion, about one hundred and fifty miles from Montreal.

Returning, members can avail themselves of the privilege of visiting the city of Detroit for a day.

The round trip railroad fare from Chicago to Montreal for this occasion is $24. Tickets are good going as early as Friday, September 21, and valid, leaving Montreal not later than Friday evening, October 2.

The meetings of the Association are open to the public. All persons of whatever profession or occupation interested in hygienic and sanitary matters are cordially invited to be present. The Secretary of the Association, Dr. Irving A. Watson, has announced in his circular:

"The indications are that a large number of the membership and their friends from the United States and Canada will attend, including a number quite remote, from our sister republic of Mexico, as the proceedings and discussions will officially embrace the French and Spanish languages in addition to English. That ladies are especially invited to be present and participate at the evening meetings, and all persons of whatever profession interested in the work of the Association will be made welcome."

We trust that a representative number from the Western States will find it convenient to attend the forthcoming meeting of the American Public Health Association. The good people and profession of the Dominion are enthusiastic over the meeting and will be prepared to extend a hospitable welcome to all who favor them with their presence.

The Medical Society of the Missouri Valley will hold its seventh annual session at Council Bluffs, Iowa, Thursday, Sept. 20, 1894. The following papers are promised:

A Plea for Patience in Obstetric Practice. F. Damour M. D., Bolckow, Mo.

Early or Preventive Treatment of Diphtheria. J. H. Talboy, M. D., Castana, Iowa.

Chronic Articular Osteitis of Hip, Analysis of 208 cases. W. Ross Martin, M. D., Omaha, Neb.

Report of an Interesting Case. W. O. Henry, M.D., Omaha, Neb.

Erosions and Lacerations of Cervix Uteri. Geo. H. Simmons, M.D., Lincoln, Neb.

A Case of Spurious Pregnancy. Adda Bowman, M.D., Reynolds, Neb.

Amaurosis, from Abscess of Frontal Sinus. Flavel B. Tiffany, M.D., Kansas City, Mo.

Two Interesting Cases which underwent Celiotomy. Donald Macrae, M.D., Council Bluffs, Iowa.

Absorbable Sutures. J. P. Lord, M.D., Omaha, Neb.

Sarcoma of Eye—Traumatic Origin. D. C. Bryant, M. D., Omaha, Neb.

The Treatment of Typhoid Fever. W. F. Milroy, M.D., Omaha, Neb.

Mental Deficiency in Children. George Mogridge, M.D., Glenwood, Iowa.

The Proper Management of Cases of Miscarriage. Mary Strong, M.D., Omaha, Neb.

Anal Fistula. J. C. Robertson, M.D., Council Bluffs, Iowa.

Two Cases of Intestinal Surgery in which the "Murphy Button" was Used. J. E. Summers, Jr., M.D., Omaha, Neb.

The Medico-Legal Aspect of Paranoia. J. Punton, M.D., Kansas City, Mo.

Ovariotomy, with Dermoid Cyst. W. S. Ross, M.D., Omaha, Neb.

The Morbid and Curative Influence of Mental and Moral Emotions. W. H. Kerr, M.D., Fall City, Neb.

Muscular Asthenopia. C. M. Hobby, M.D., Iowa City, Iowa.

"Anthrax" or Malignant Pustule. W. Jepson, M.D., Sioux City, Iowa.

The Beginnings of Disease. A. B. Somers, M. D., Omaha, Neb.

Hyperemesis Gravidarum. B. F. Crummer, M.D., Omaha, Neb.

Operative Treatment for Vascular Naevus. A. F. Jonas, M.D., Omaha, Neb.

A Case of Quadrisectoral Hemianopia. M. F. Weymann, M.D., St. Joseph, Mo.

Total Hysterectomy without Ligation of Uterine Arteries. J. E. Summers, Jr., M.D., Omaha, Neb.

National Association of Railway Surgeons.—The Executive Committee of the National Association of Railway Surgeons met September 4 to make arrangements for the 1895 annual meeting of the Association, which will be in Chicago. The members of the committee are:

Dr. J. M. Dinnen of Fort Wayne, Ind., Secretary of the Association; Drs. W. B. Outten, St. Louis; S. S. Thorn, Toledo; R. Harvey Reed, Toledo; J. H. Ford, Wabash, Ind.; J. B. Murphy, Chicago; Alex Mullen, Jr., Michigan City; H. N. Warehouse, Danville, Ind.; B. Emmett Welsh, Grand Rapids, Mich.; E. R. Lewis, Kansas City, and Dr. Bouffleur of Chicago.

The Tri-State Medical Society (Illinois, Iowa and Missouri) meets in Jacksonville, Ill., Oct. 2 and 3, 1894. A large and interesting meeting is promised. Leading members of the profession of Chicago, St. Louis, Indianapolis, Kansas City and elsewhere have signified their intention of being present.

PUBLIC HEALTH.

Typhoid Renewal of Vaccinal Susceptibility.—Dr. William Finder communicates to the *Medical Standard* the results of his observations on typhoid fever patients with reference to vaccination. He finds that after recovery the susceptibility to the vaccine is markedly renewed. He has verified his observations many times during a number of years and suggests that others should test his conclusions. So satisfied is he with the correctness of his observations that he always re-vaccinates his typhoid patients on recovery.

Typhoid Fever at Elizabeth, New Jersey.—During the past month, this city has suffered from a re-awakening of typhoid fever; there having been sixty-two cases with five deaths. There are several now under treatment in hospital. The disease is alleged to have taken its start in a row of houses, whose back yards run to the margin of the Elizabeth River. This is porous "made-ground," and is permeated by the filthy sewage of a large portion of the city, for when the tide ebbs some of the bed of the stream is exposed to view, with repulsive sediment and giving off foul odors. The wells in this vicinity are supposed to be contaminated by the imbibition through the loose soil of typhoid germs from the noisome river bed. The inspectors have reported in favor of cleansing the river bed, at an expense of $7,000. The Board of Health has ordered the closure of some of the wells, until cold weather sets in.

School Children and Vaccination.—On the 28th ult., Judge Bartlett of the Brooklyn Supreme Court, handed down a decision regarding the application for mandamuses in two actions, brought through the Anti-Vaccination League to compel school principals to admit pupils who refuse to be vaccinated. In denying the application Judge Bartlett said:

"The avowed purpose of the application is to test the constitutionality of Section 200 of the Public Health law of this State, which provides that no child nor person not vaccinated shall be admitted or received into any of the public schools of the State, and commands the trustees or other officers having the charge, management or control of such schools to cause this prohibition to be enforced. Upon the oral argument I expressed the opinion that this enactment was a valid exercise of the police power of the Legislature, and that view has only been confirmed by an examination of the authorities cited in the briefs of counsel. A common school education, under the existing Constitution of the State of New York, is a privilege rather than a right. It is created by legislation, and subject to legislative regulation. . . It follows that the State can certainly exercise this discretion by debarring from attendance at the public schools such persons as are unwilling to adopt a precaution which, in the judgment of the Legislature, is essential to the preservation of the health of the large body of scholars."

Milwaukee's Unfortunate Notoriety.—Under the heading 'Anarchists, Anti-Vaccinators and Anti-Pasteurists," the *British Medical Journal* (August 25), editorially comments upon the foregathering of these three classes of obstructives, as exhibited in an assembly of anarchists at a "friendly evening" at the house of the President of the Anti-Vivisection League in Paris, and in an outdoor gathering including a quaint collection of "Anti's" generally, to protest against the British Institute of Preventive Medicine. At this latter function a letter was read from Mr. G. W. Russell, a member of the English Ministry and—we have the *Journal's* word for it—"a man of culture," in which he announced that he detested Pasteurism—and, of course, also Listerism. Whereupon the *Journal* asks: "Why not add that he has a contempt for the equator and grave doubts about gravitation? To be logical, Mr. Russell should add the inevitable converse of his proposition, and declare that he loves smallpox, is much attached to hydrophobia, and adores blood-poisoning and high hospital mortality."

The article is here referred to as a striking illustration of the natural affinity certain classes of mischief-makers and destructives have for each other—not at all as affording any consolation, on the *tu quoque* basis of retort, for the disgraceful condition of affairs in Milwaukee. There is a common bond between the "Anti's." Scratch an opponent of vivisection and you will find an anti-vaccinist; and under the anti-vaccinist's skin will frequently be found an anarchist. To pose as "against all science," and to be "agin the government," whatever it may be, are correlative attitudes and, in their essence, are anarchism, pure and simple.

So far as its public health interests are concerned the city of Milwaukee has, for some time, been in the hands of the anarchists. Law is defied, its officers have been assaulted, excited mobs have been harangued in the most incendiary language to "resist to the death" the enforcement of vaccination and the removal of smallpox patients to the isolation hospital; and bloody riots and scenes of the most disgraceful violence have been the result. The State Board of Health and the State Executive have been appealed to, to take charge of affairs, to restore order and to enforce the laws.

And all this in the closing days of the nineteenth century and in a city of magnitude in the United States of America!

In the end there will be a return of sanity in the conduct of affairs in Milwaukee; the Health Department will be sustained and the supremacy of the law vindicated. But, meanwhile, although the State Board of Health, after a patient and searching investigation, finds that the Health Commissioner, Dr. Kempster, "has been faithfully, honestly and ably endeavoring to use all necessary precautions and to enforce needed sanitary regulations;" that it completely exonerates him from the trumped-up charges of incompetency, and finds the cause of the troubles that have arisen in "a most unfortunate lack of harmony between the Health Department and certain officials and other citizens"—whom it refrains from specifying; that it declares that there has been "unreasonable opposition and hostility to the efforts of the Health Commissioner," and that it pronounces, after special investigation, the condition of the isolation hospital excellent and commends "the methods of treatment there used and the care given the patients"—notwithstanding all this the state of anarchy at this writing still continues.

Milwaukee has suffered from labor riots that required the most heroic treatment to suppress; from a series of destructive fires; from several more or less questionable bank failures; from the smallpox itself. But none of these, nor all combined, could give it its present unfortunate notoriety.

Cholera Prospects.—If "no news is good news" as regards cholera, then this country is to be congratulated on the dearth of intelligence during the past week concerning the progress of the present epidemic. Except for a short-lived sensation over the disposal of a scow-load of sand—part of the ballast of the ship *Allers*, which arrived recently in New York harbor from Antwerp, described in the newspapers as

"a cholera-infested European port"—there has been nothing to give the *quid nunc* any occasion for gossip. The scow was towed out to sea, the sand dumped into the Atlantic, and there an end on't.

But while we may congratulate ourselves upon this uninterrupted progress toward the end of the period of watchfulness and anxiety, the situation in Europe is, unquestionably, serious. At the beginning of July Asiatic cholera had prevailed in epidemic form in twenty-five districts in Russia, five in Austria-Hungary and three in German Poland; it had appeared sporadically in the departments of Morbihan and Finisterre in France, in two provinces of Belgium, Liége and Limbourg, and in European Turkey. Up to the close of August fifteen more districts of Russia and all the western part of the Empire, including St. Petersburg and Cronstadt, had been invaded; the disease had ravaged the basins of the Zbruez and the Vistula in Austria-Hungary and Germany—those rivers having evidently become polluted; in the Low Countries the Meuse and the Sambre had become highways of infection, the disease appearing at many places on their banks and at their estuaries; while numerous scattered cases had occurred in various parts of France, as at Marseilles, where true cholera undoubtedly exists, and exclusive of the so-called "cholerine" in Paris and in the departments of the Meuse, Muerthe-et-Moselle, Vaucluse and Seine-et-Oise; imported cases, mainly from Russia, had appeared in Berlin, Bremen, Fejan (Sweden) and in London.

Since the last of August there have been further developments of the disease in the Low Countries, one case reported on the 2d inst., at Nieuport in West Flanders, one case at Spykenisse and one death at Boksmeer. On the 1st inst., it was reported that "cholera of a virulent type" is raging in Russian Poland. The medical authorities are said to be unable to cope with the disease owing to the fact that the inhabitants conceal their sick and treat them in their own way. The chief centers of the disease are Pinczow, Miechow, Stopnica and Dzialczyce, where the inhabitants are camping in the woods. And there is no abatement of the epidemic in Galicia where, during the first three days of the month there were reported 623 new cases and 313 deaths; during the same period there were 46 new cases and 25 deaths in Bukowina.

The English authorities do not attempt to conceal the gravity of the situation, but regard with concern the next four weeks, knowing that the westward march of the disease, when it prevails to its present extent, has usually brought it to their shores toward the termination of the summer months, thus making its seasonal incidence in the period between the middle of August and the middle of September. For this reason, among others, the utmost vigilance is maintained; medical inspectors are ready at a moment's notice to investigate suspicious cases, and it is reported that cases not to be distinguished from true cholera have been thus discovered—some of them in London itself—within the past few weeks. It is added that "the most rigid sanitary measures have been adopted in each case, and as yet, happily, there has been no extension."

It is obvious that in these precautions lies a great measure of safety for this country, but not sufficient to justify any relaxation of vigilance upon the part of our maritime sanitary authorities. It is recalled that two years ago this month, cholera actually invaded New York from Hamburg, and that there was an outbreak of the disease with a number of deaths in the city itself. It is also recalled that it was in September one year ago that the disease "got a foothold in England and prevailed most widely and with deadliest effect throughout Europe." If it be true, as suggested in the JOURNAL last week, that the cholera germ has become domesticated in Europe, and thence that the danger of cholera importation to this country has become permanent and continuous, our precautions must be permanent and continuous, and more especially must they not be relaxed during this period of seasonal incidence.

MISCELLANY.

Dr. O. W. Holmes.—Dr. Oliver Wendell Holmes was 85 years old August 29, and celebrated that event in his summer home in Beverly Farms.

For Congressional Honors.—The following doctors have been nominated for Congress: Dr. L. F. Weaver, of Niles, Mich., Dr. Bernard Groeser, of Le Mars, Iowa, and Dr. J. A. Hatch of Kentland, Ind.

Immoral Massage.—Possibly moved thereto by the unwelcome notoriety given to its "massage parlors" the city of Chicago has begun what the newspapers call "a crusade" against these dens of vice. An investigation has been commenced by the police and the licenses of nine of the most notorious have already been recommended for revocation. They are characterized in the report of the investigation as "little if any better than the lowest 'dives' in the city." The term "massage" had come to be so closely identified with the practices of these "parlors" that physicians were growing shy of recommending the treatment.

Reproduction of the Bacteria.—In a rather ill-natured report of the proceedings of the recent meeting of the British Health Institute, published in the *Sanitary Record*, August 4, there occurs this passage:

"The close of the day was devoted by some to seeing what was to be seen at the Covent Garden Theater—not Drury Lane, as originally announced. But previously there was a lecture in the Great Hall of King's College, on "Microbes and the Spread of Disease," by Prof. E. M. Crookshank, who among other minute but too pregnant facts, informed his audience that a single bacterium stood in about the same relative proportion to a man as did a grain of sand to the highest mountain, a postage-stamp being large enough to hold, spread singly upon it, no less than four hundred thousand bacteria. Though often appearing in questionable form and often in dangerous development, their existence in some form was essential to both vegetable and animal life, though bacteria were extremely lively, too, one (or did the lecturer mean two?) being able to reproduce more than sixteen millions of the same lively kind in twenty-four hours!"

Judging by the query enclosed in parenthesis, this reporter's knowledge of the mode of reproduction of the bacteria is extremely hazy to say the least.

Bellevue Hospital Alumni.—The society of this Hospital has published a circular, dated Aug. 1, 1894, stating an active membership of 200 with other evidences of virile youth. The society has prospered, and an invitation has recently been tendered to all former internes of the institution, wherever they may be located for practice, to join the society, as a means of bringing up the numerical strength and of increasing the contributors to the scientific outgivings of the meetings, the proceedings of which will appear regularly in one of the New York medical weeklies. For the present, no fee for initiation is required; the annual due of resident members is $10, that of non-resident members is $3. A general re-union of all the alumni has been canvassed to be held in January or February next, with a subscription dinner. The alumni, widely scattered throughout the country, will be glad to receive timely notice of this rather novel Medical Congress of Internes.

A New Use for Ammonia; a Defense Against Burglary.—A Brooklyn druggist recently succeeded in putting to flight two ugly burglars who endeavored to loot his store, in the dead of the night, by means of copious external applications of aqua ammoniæ. The druggist was awakened by a man who had made entrance into his store by forcing the fanlight of the front door. The second thief also came in by the same ingress, while the druggist was considering his best ways and means of defense. A large bottle of ammonia was on

an inside counter, the cork of which he quietly drew, and filling up a large beaker he waited for one of the thieves to approach the prescription department. One of the men sought to break open the money-drawer, but without success. Then the pair of them set to work to rifle the show-cases. They had piled up a lot of valuable goods, when one of the men came quite close to the corner where the druggist stood. The latter, without delay, deluged the head of the man with a beakerful of the ammonia, causing him to fall gasping and unconscious to the floor. The comrade rushed up to see what had happened, when the druggist also gave him a beakerful in the neck. He was staggered, but not so far overcome, but that he was able to rush out and make his escape. The man who received the first invoice of ammonia did not succeed in getting away, and was held for trial.

Not for Mesdames.—In confirmation of the fact, heretofore noted in the JOURNAL,[1] that "the more beautiful women of a most beautiful country do not take kindly to the practice of physic," it is noted that in the enrollment of women attending university lectures, just made in Paris, of 155 on the list of the medical faculty only 16 were of French birth, while of the 164 on the faculty of letters 141 were French; 7 studied under the faculty of science and 3 under that of law. On the other hand, Russia, in response to a growing demand and long-cherished desire, is opening the doors of her universities to women medical students. A medical faculty for women is about to be established in St. Petersburg, a departure which is regarded as a proof that the opposition against the higher education of women in Russia is about to be dropped. The change in policy is said to be due to the influence of Prince Wilkowsky, whose speech at the Chicago Exhibition on the importance of education for the welfare of the State attracted a good deal of attention at the time in America.

A Confusion of Identity.—In its editorial notice of the special report of the State Factory Inspectors on "Smallpox in the Tenement-House Sweat-Shops of Chicago," our usually accurate and well-informed contemporary, the *Boston Medical and Surgical Journal* (August 30) does a serious injustice to the Illinois State Board of Health. In the first paragraph of the editorial it is said that, "The State Board of Health testified that no contractor or housefinisher had ever voluntarily complied either with the State law or with the city ordinances," etc. This testimony was given by the statistician of the *City* Board of Health, and not by the State Board (see page 7 of Report.) In the next paragraph the State Board is again referred to as receiving the reports of cases of smallpox, which, as communicated to the Factory Inspectors, proved to be "so small a part of those which actually occurred that other sources of information had to be sought for;" and it is added that, "After the middle of June, the State Board of Health declined to give information and is generally censured by the report as inefficient and even culpable." Without entering upon the question of the merits of this report or upon the justice of its strictures, it is due the Illinois State Board of Health that the statement above quoted should be corrected. There is nothing in the report to warrant it; the only reference to the State Board is that upon page 9, where it is stated that its representatives met with the representatives of the State Boards of Michigan, Wisconsin, Ohio and Indiana and the garment manufacturers of Chicago on May 10, and agreed "to institute an efficient daily inspection of all shops and workrooms." There is no other mention of, or reference to, the State Board, either in the way of censure or commendation, from beginning to end of the report.

[1] JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, July 28, 1894: "Woman in Medicine."

The Modern Jenner will Subjugate Leprosy and Cancer.—Dr. Keeley has one friend left, the Rev. Dr. Talmage. The latter having gone on a money making tour to the Sandwich Islands and to the far East, has taken the trouble to write back to one of his weekly papers in fulsome laudation of Keeley. In order to leave no doubt in the minds of his readers that he, Dr. Talmage, is wholly unfit to express an opinion upon any medical subject, the venerable divine goes so far as to try and draw a parallel between the great Jenner and the modern pretender whom he has befriended, and who has perhaps financially befriended the divine. The opening paragraphs are taken up with the consideration of the Molokai Island retreat for Hawaiian lepers, and of the incurable malady affecting about one thousand residents on that island. His aim is to show that leprosy and cancer will meet their conquerors, just as surely as that smallpox was virtually overthrown by the great Jenner. He says:

"But do not let us give up discouraged. Leprosy as well as cancer and all the other unconquered ailments will yet be cured. I do not know where the cradle now holding the coming doctor is being rocked, whether at Molokai, or in Honolulu, or on the banks of the Thames, or the Rhine, or the Tiber, or the Ural, or the Hudson, or the Savannah. Nor do I know from what college he will unroll his diploma, nor in what laboratory he will make his experiments, nor in what decade he will give proclamation of the world's emancipation from diseases as yet incurable, but he will go through the same persecutions that Dr. Jenner did because of his discovery of a way to halt smallpox, and as Dr. Keeley has endured because of his almost supernatural cure of alcoholism, and the new discoverer will run the gauntlet of caricature, and expulsion from medical societies, and will, like the most illustrious Being of all ages, become the target for expectoration, but the discoverer will give leprosy the command, "Thus far shalt thou go, and no farther," and that disease will wriggle and crawl and shrink out of the world, and after the medical emancipator is dead, the nations will build a monument so high to his memory that the granite shaft will dispute with the skies the right of possession, and in the epitaph thereon the clicking chisel will try to atone for the slanderous tongue, and the world that held back from the discoverer the bread of honest praise, will give him a storm of post-mortem commemoration. Forward, the whole column of surgeons and physicians for the conquest of leprosy and cancer.

New Orleans Notes.

DR. R. W. WALMSLEY, of New Orleans, has recently been appointed a member of the Louisiana State Board of Health, succeeding Mr. King.

THE LATE DR. ALBERT B. MILES, House Surgeon of the Charity Hospital of New Orleans, left $10,000 each to the following institutions: Medical Department Tulane University of Louisiana; Charity Hospital of New Orleans; and the Hotel Dieu, also of New Orleans.

St. Louis Notes.

THE BEAUMONT MEDICAL College has found it expedient to lower its fees.

THE MISSOURI MEDICAL COLLEGE is making good progress with its fine new college structure on Jefferson Avenue near Washington Avenue. The building is of sandstone and brick, and its front already presents an imposing and attractive appearance. It adjoins the Polyclinic, and hereafter the school will have the advantage of being practically under one roof. The new building will not be ready for use before the latter part of the coming college year.

APPOINTMENTS.—Dr. C. B. Burns has resigned as Medical Superintendent of the Eastern Michigan Asylum, at Pontiac, and is now in charge of the private hospital for the insane at Flint, Oak Grove, until now under the direction of Dr. George C. Palmer, formerly Medical Superintendent of the Michigan Asylum at Kalamazoo. Dr. E. A. Christian, formerly Assistant Superintendent, has been made Medical Superintendent of the Eastern Michigan Asylum. Dr. W.

M. Edwards, Medical Superintendent of the Michigan Asylum at Kalamazoo, is now traveling in Europe.

THE MARION-SIMS COLLEGE OF MEDICINE already has between two and three hundred matriculates, twice the number ever enrolled at a corresponding time of year. At its opening on September 11, an enrollment of 350 students is expected. The buildings have been entirely renovated and beautifully decorated, and a large amount of money has been expended in enlargement of laboratories. The medical library established for students is a very commendable departure.

THE ST. LOUIS CITY HOSPITAL will be open to medical students October 1. Clinics will be held there on Mondays, Wednesdays and Fridays, from 2 to 5 P.M. The first two hours will be given to medical and surgical clinics, the last to specialties: Ophthalmology, otology, dermatology, etc. Clinical lecturers are to be selected from each accredited college, with power to choose alternates, and each lecturer will serve one month, in regular rotation of service.

The City Board of Health, besides making these rules, has decided that only second and third year students are to be admitted to the clinics at the City Hospital, and each college is required to furnish its students with cards attesting their eligibility to admission under this rule.

At its meeting on August 30, the Board of Health passed also the following resolutions concerning the City Hospital:

WHEREAS, The nature of the diseases or infirmities of patients sent to the city institutions should be as carefully shielded from publicity as are those of persons receiving professional treatment in their own homes; therefore be it

Resolved, That the Board approves the following rules:

1. The superintendents of the several hospitals are hereby authorized and required to refuse to divulge to any one not officially entitled to receive it any information respecting the names, the cause or causes which led to the admission of patients to the institutions under their charge, nor concerning their illness or the treatment received while there, and they will cause this rule to be strictly observed by every attaché and employe of the institution.

2. The superintendents are authorized to deny to the representatives of the public press access to their respective institutions, when it is found that this courtesy tends to defeat the purpose of the above rule.

The above rules do not restrict reports made to medical societies, nor to medical journals.

These resolutions, evidently, are directed against the publication in the daily press of the details of injury and disease, and of operations to which patients are subjected in the City Hospital. During the past year or more, the public has been daily treated to such details, with all the added horrors of the reporter's ambitious imagination. Besides, there has never been wanting in these harrowing descriptions anything that might serve to excite the wonder and admiration of the public anent the skilful treatment of patients by the superintendent of the institution. Since these reports have now heralded to the public the remarkable versatility of the superintendent, showing the unwearying skill with which he manages all kinds of cases from brain localization and surgery to the treatment of morphinomaniacs, possibly the Board of Health has concluded that their superintendent has run the gamut, and that further details will be unnecessary. Since this action of the Board of Health, one newspaper has been disposed to oppose the removal of this source of highly sensational items, and the assertion is made that the resolutions were prompted by the jealousy of physicians who envied the great reputation the superintendent had made, and who sought to stop its further increase by manipulating a department of the city government when they lacked the moral courage to arraign the offender before the medical society.

Washington Notes.

CONGRESSMAN MEREDITH, of Virginia, is dangerously ill with diphtheria which he contracted while visiting the late Dr. Osmun, who died with that disease.

DR. A. F. A. KING, late Dean of the Columbian Medical School, is to be married to Miss Dexter, of Boston, in October.

CITY PUMPS.—Analyzing of the water from pumps is being continued. Many pumps are found to be contaminated with sewage and when such is the case the Commissioners order the pump condemned and removed.

CENTRAL DISPENSARY AND EMERGENCY HOSPITAL.—Seventeen visiting Knights of Pythias were treated during the Encampment; fourteen suffered from cholera morbus, two from exhaustion, and one from epilepsy.

A SUICIDE, in the service of Dr. Kerr, with a bullet wound of both walls of the right ventricle, followed by profuse external hemorrhage, lived for two hours. The case will be reported in full.

PAST ASSISTANT-SURGEON J. J. Kinyoun has been detailed to represent the Marine-Hospital Service at the Tenth International Congress of Hygiene and Dermography at Buda-Pesth.

NO MORE HIGH BUILDINGS IN WASHINGTON.—The new building regulation restricting the height of buildings went into effect Sept. 1, and hereafter no building will be allowed to be erected whose height above the sidewalk exceeds the width of the street in its front, nor will any building be allowed on a resident street greater than ninety feet high. On business streets it is different, and buildings may be erect not exceeding 110 feet in height in any case.

SENATOR GORMAN'S HEALTH.—The medical profession will be pleased to learn that Senator Gorman is fully restored to health. He was very much "run down" by his continuous brain wearing duties during the present sesion of Congress and is now taking the rest which was required to restore him to his usual vigor. The physicians through this entire hemisphere can never forget that to him is due the passage of the appropriation bill which made the Pan-American Medical Congress a possibility.

DEPUTY CORONER APPOINTED.—Dr. Larkin Glazebrook has been appointed Deputy Coroner for the District, his appointment to take effect September 1. Dr. Glazebrook is a young physician of this city, and was highly recommended for the position, which for several years past has been held by Dr. Edward M. Schaeffer. Heretofore the deputy coroner has been without authority to act in the absence of the coroner, and under the recent act of Congress a deputy coroner is authorized to assume all the duties of the coroner in his absence. The compensation of the deputy coroner was fixed at $5 per day while so employed.

CHANGES IN THE HEALTH OFFICE.—The Commissioners have directed that Harry Clay McLean be appointed Chief Clerk of the Health Office, *vice* E. D. Tracy. The appointment will take effect from September 3. Mr. McLean was until recently Chief Clerk of the Supervising Architect's office of the Treasury. William D. Hughes, who has been a Sanitary Inspector attached to the Health Office, was removed to make room for Dr. William C. Fowler, whose appointment will date from October 1. B. F. Peters, a clerk in the Health Office at a salary of $1,400, was removed and Charles G. Sanders, who has been a $1,200 clerk in the same office, was promoted to his place. William H. Forester was appointed to the clerkship made vacant by the promotion of Mr. Sanders.

LOW DEATH RATE OF WASHINGTON FOR THE PAST WEEK.—The favorable health conditions of the city continue. By recent reports to the Health Department it is shown that the low death rate was repeated last week. By an unusual coincidence the number of deaths, and consequently the death rates, as well as the relative mortality between white and colored, were precisely the same for the two

weeks. There was at the same time a material increase in fatal cases of consumption, while the deaths from typhoid fever were equal in number. Malarial fevers do not prevail to any extent in dangerous form, and the absence of epidemic diseases renders the health of the city in a very satisfactory condition in view of the season of the year.

CHEMISTS ELECT OFFICERS.—The Association of the Official Chemists met yesterday morning and after a short discussion of the analysis of milk proceeded to the election of officers. The following were elected: President, H. A. Huston, State Chemist of Indiana; Vice-President, B. B. Ross, of Auburn, Alabama; Secretary, H. W. Wiley, Chief Chemist United States Department of Agriculture. After the election of officers the Convention adjourned to meet here about this time next year. The Convention, this year has been very successful, as there was a large attendance of delegates and some important changes have been made in the official formula for analyzing foods, fermented liquors dairy products, etc.

ANIMALS AT LARGE.—In the police court (District of Columbia) in a few days one of the judges will probably be called upon to construe the new regulation concerning animals at large. The law reads:

"No horse, mule, sheep, swine, dog or bitch, bovine or other cattle shall be allowed to run at large in the District of Columbia, and any person owning or harboring any such animal, who shall suffer or permit the same to wander, rove or run at large, unrestrained, shall upon conviction thereof before the police court of said District, be fined as hereafter provided, with costs of prosecution, for such offense."

It is said by some persons that this law will conflict with the act of Congress requiring dogs to wear collars and tags, and the question of what "unrestrained" means will also have to be decided.

REPORT ON THE CAISSON EXPLOSION IN CHICAGO.—Captain Roger Birnie, the ordnance expert who was sent to Fort Sheridan, near Chicago, by Gen. Flagler, Chief of Ordnance of the army, to investigate the recent explosion of a shrapnel shell, has returned to Washington for the purpose of making a report in regard to the cause or causes of the accident. He brought with him about a dozen fuses taken from the lot of shells which were defective, in order that they may be subjected to scientific tests. Ordnance officers are thoroughly convinced that the recent explosions of caissons at Chicago were due to a defect in the equipment of the shrapnel shells. This device, faulty in construction, and therefore more dangerous to friend than to foe, is to-day under the ban of the army, and it has been ordered out of service. The shells are not much more valuable than scrap iron, and their retirement makes necessary the adoption of some other invention of exploding projectiles. It is also probable that a new form of caisson will be adopted, the one now in use being nearly a century behind the times, and practically obsolete.

MEXICAN WAR PENSIONERS.—Several thousand pension claims are affected by four recent rulings of Acting Secretary of the Interior Reynolds, construing the act of Jan. 5, 1893, which provides for increase of pension from $8 to $12 per month on account of service in the Mexican war. The Acting Secretary holds that the increase granted under that act does not commence at the date of the act, but from the date of approval of the increase claim in the Pension Bureau, and that the increase does not apply to the case of widows

The act, says Judge Reynolds, does not include those persons who composed Powell's battalion of Missouri volunteers, who were directed to be placed upon the pension roll subject to the provisions of the act of Jan. 29, 1887, pensioning the survivors of the war with Mexico. The Department also holds that the fee of $25 claimed by attorneys, under articles of agreement, can not be allowed, and no fee in excess of $2 can be paid, as provided in the act of March 3, 1891, the increase being in the nature of an allowance on account of increase of the disability for which the soldier is already pensioned.

THE PUBLIC SERVICES.

Army Changes. Official list of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from August 25, 1894, to August 31, 1894.

Major LOUIS M. MAUS, Surgeon U. S. A. (Ft. Sam Houston, Texas), is granted one month's leave of absence.

First Lieut. FREDERICK P. REYNOLDS, Asst. Surgeon U. S. A. (U. S. Military Academy, West Point, N. Y.), is granted thirty days' leave of absence.

Capt. JEFFERSON R. KEAN, Asst. Surgeon, is granted leave of absence for one month, to take effect when relieved from duty at St. Francis Barracks, Fla.

Capt. LOUIS A. LA GARDE, Asst. Surgeon, relieved from duty as attending surgeon and examiner of recruits, Hdqrs. Dept. of the Colorado, and ordered to Ft. Logan, Col.

Major JOHN D. HALL, Surgeon, upon the arrival of Major J. C. MERRILL, Surgeon, at Ft. Sherman, Idaho, will be relieved, and report for duty at Madison Bks., N. Y., relieving Major DANIEL G. CALDWELL, Surgeon. Major CALDWELL, on being thus relieved, will report for duty at St. Francis Bks., Fla., for duty, relieving Capt. JEFFERSON R. KEAN, Asst. Surgeon. Capt. KEAN, on being thus relieved, is ordered to Key West Bks., Fla., for duty.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending September 1, 1894.

Asst. Surgeons C. D. BROWNELL, ROBERT BOYD and E. R. PIGOTT, ordered to examination for promotion.

Marine-Hospital Changes. Official list of changes of stations and duties of medical officers of the U. S. Marine-Hospital Service, for the five weeks ended August 25, 1894.

Surgeon P. H. BAILHACHE, granted leave of absence for five days, Aug. 3, 1894.

Surgeon J. B. HAMILTON, granted leave of absence for five days, Aug. 16, 1894.

Surgeon H. W. SAWTELLE, granted leave of absence for five days, Aug. 12, 1894.

Surgeon J. M. GASSAWAY, granted leave of absence for two days, Aug. 11, 1894.

Surgeon G. W. STONER, granted leave of absence for seven days, July 28, 1894.

Surgeon FAIRFAX IRWIN, to proceed to Brussels, Belgium, for special duty, July 24, 1894. To Rotterdam, Netherlands, July 27, 1894. To proceed to Hull, Liverpool, and other English ports, on special duty, Aug. 9, 1894.

Surgeon F. W. MEAD, granted leave of absence for thirty days, Aug. 4, 1894.

P. A. Surgeon C. E. BANKS, to proceed to Halifax, Nova Scotia, for special duty, Aug. 16, 1894.

P. A. Surgeon A. H. GLENNAN, granted leave of absence for six days, Aug. 14, 1894.

P. A. Surgeon S. D. BROOKS, to proceed to Duluth, Minn., and Superior, Wis., as inspector, July 24, 1894.

P. A. Surgeon J. H. WHITE, relieved from duty at Savannah, Ga., and ordered to report to the medical officer in command of the Service at New York City for duty, Aug. 6, 1894.

P. A. Surgeon P. M. CARRINGTON, to proceed to Evansville, Ind., for duty, Aug. 6, 1894.

P. A. Surgeon J. J. KINYOUN, to proceed to Buda-Pesth, Austria, to represent Department at International Congress of Hygiene and Demography, Aug. 14, 1894.

P. A. Surgeon G. T. VAUGHAN, granted leave of absence for six months, Aug. 28, 1894.

P. A. Surgeon C. P. WERTENBAKER, to report at Bureau for instructions, Aug. 4, 1894. To proceed to Cape Charles Quarantine for temporary duty, Aug. 7, 1894. To proceed to Delaware Breakwater Quarantine for duty, Aug. 20, 1894.

Asst. Surgeon C. H. GARDNER, granted leave of absence for fifteen days, Aug. 18, 1894.

Asst. Surgeon SEATON NORMAN, to proceed to Baltimore, Md., for duty, Aug. 6, 1894.

Asst. Surgeon E. K. SPRAGUE, to inspect unserviceable property at St. Louis, Mo., July 26, 1894.

PROMOTION.

Asst. Surgeon E. R. HOUGHTON, commissioned as Passed Assistant Surgeon, July 20, 1894.

LETTERS RECEIVED

(A) Anderson, R. B., Seguin, Texas; Atkinson, W. B. (2) Philadelphia, Pa.; Archer, J. F., Shelby, Miss.; Antikamnia Chemical Co., (2) St, Louis, Mo.

(B) Brobst, J. A., Macungie, Pa.; Bates & Morse Adv. Agency, New York, N. Y.; Burr, C. B., (2) Flint, Mich.; Baldwin, J. F., Columbus, Ohio.

(C) Corr, A. C., Carlinville, Ill.; Coffmann, J. J., Scotland, Pa.; Craver, S. B., Auburndale, Ohio.

(D) Dixon, J. N., Springfield, Ill., Delanp, S. P., New Orleans, La.; Dunglison, R. J., Philadelphia, Pa.

(E) Eastman, Joseph, Indianapolis, Ind.

(F) Fullerton, E. B., Columbus, Ohio; Fehr, Julius, Hoboken, N. J.; Fisher, R. D., Indianapolis, Ind.

(G) Gandy, Chas. M., Mammoth Hot Springs P. O., Wyo.

(H) Howe, W. P., Oran, Mo.; Hopkins, J. G., Thomasville, Ga.; Hubbard, Thos., (2) Toledo, Ohio.

(I) Imperial Granum Co., New Haven, Conn.

(J) Johnson, H. L. E., Washington, D. C.

(K) Krotoszyner, S., San Francisco, Cal.; Kephart, A., Petoskey, Mich.; Kleinschmidt, C. H. A., Washington, D. C.

(L) Lehn & Fink, New York, N. Y.

(M) McBride, M. A., Leesville, Texas; Moyer, H. N., Chicago, Ill.; Medlin, P. O., St. Louis, Mo.; Maghee, Thos., Rawlins, Wyo.

(N) Neier, O. C., New Palestine, Ill.; Norbury, Frank P., St. Louis, Mo.; Northrup, H. J., Saginaw, Mich.

(P) Parkhill, Clayton, Denver, Col.

(R) Robertson, J. W., Livermore, Cal.; Roe, John O., (2) Rochester, N. Y.

(S) Seibert, W. H., Steelton, Pa.; Sherman, H. M, San Francisco, Cal.; Smart, Chas., Washington, D. C.; Smith, Mark B., Minneapolis.

(T) Troy Buggy Works, Troy, Ohio; Taylor, W. S., San Francisco, Cal.; Thayer, O. V., San Diego, Cal.; Taylor, D. M., Canajoharie, N. Y.; Troup Mfg. Co., Dayton, Ohio; Trowbridge, L. S., Detroit, Mich.

(W) Will, O. B., Peoria, Ill.; Wilkinson, A. D., Washington, D. C.; Waters, Robt. C., Perryville, Mo.; Woodbridge, J. E., Youngstown, Ohio; Whelpley, A. W., Cincinnati, Ohio; Woolsey, E. H., Oakland, Cal.; Wurdemann, H. V., Milwaukee, Wis.